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INTENSIVE METHODS OF TREATING SYPHILIS

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Paul Ehrlich worked for years synthesizing an arsenical compound to cure syphilis. The *therapia magna sterilisans*, he thought, had been achieved with his six hundred and sixth preparation, arsphenamine (introduced as salvarsan), to be injected intramuscularly, one injection sufficing. Relapses as well as reactions disclosed differently and he synthesized another arsenical, neoarsphenamine, and later still others. When none of these worked he and his collaborators suggested use of more than one injection. Every physician agreed to the effect of the trivalent arsenical salts on *Treponema pallidum*, but it required trial and error as well as evaluation of enormous amounts of case material before medicine finally awakened to the profound effect of these compounds on syphilis. Injections of the arsenical were at first widely spaced between other forms of therapy—mercury. Later a physician here and there had the temerity to use injections perhaps once a month later once a week. It was one of our American dermatologists, Sigmund Pollitzer, who suggested three daily injections of an arsenical followed by a course of mercury, then a rest and repetition of the foregoing. Unfortunately, the worthwhile part of Pollitzer's advice was ignored since his cases relapsed far more frequently than other cases treated in a continuous fashion the relapse being due to the rest period as we now see it. However, Pollitzer's idea was not forgotten. Quite early the Cooperative Group studies showed that it was not only type of therapy but also amount of therapy given in a continuous manner that played so great a role in "cure." Probably the crystallization of all these studies was the statistical survey of Padgett's¹ indicating the importance in acute syphilis of the number of arsenical injections and conversely the time span in which they were given after inception of the disease.

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Drs. George Binkley, C. L. Cummer, J. R. Driver, Winthrop Hubler, Max Kraus and C. C. LaRocco gave assistance in completing records as well as in supervising and caring for patients in this study.

A. L. Surg. Gen. R. A. Vonderlehr, Division of Venereal Disease, U. S. I. H. S. and Miss Lada J. Laiton, chief statistician, U. S. I. H. S. gave help and guidance in assembling the material presented in this paper.

† Talcott Paul, Long Term Results in the Treatment of Early Syphilis, *J. A. M. A.* 116:1-11 (Jan 4) 1941.

INTRAVENOUS DRIP THERAPY OF SYPHILIS

A further great stride in syphilotherapy was worked out by Chargin, Hyman, Leifer and their collaborators.² They found that when active or inert chemicals, drugs and biologic products are injected intravenously in a rapid manner they may give rise to alarming symptoms, so-called speed shock. On the other hand, by regulating the rate of flow of the preparation by means of an intravenous drip so that not more than 2 to 3 cc a minute was injected, they were able to introduce even toxic substances like histamine without difficulty. Experiments were then tried on man with like results and Chargin felt that the method might be applied to the use of larger doses of the arsenicals than are ordinarily employed in treating syphilis. First observations were made with neoarsphenamine and results were very promising, but reactions, especially peripheral neuritis and cerebral symptoms, were high and after some ineffectual attempts to use arsphenamine they turned to mapharsen. The dose employed was 240 mg daily dissolved in 2,000 to 2,400 cc of 5 per cent dextrose solution administered by the rectal drip. Among 283 patients there were 5 mild cases of peripheral neuritis and, while there were no fatalities from its use, 1 patient developed convulsions two days after termination of therapy and lapsed into a stupor for forty-eight hours. In 2 other cases there were mild cerebral symptoms, all 3 interpreted by them as varying grades of hemorrhagic encephalitis. Therapeutically, of 176 patients followed for at least a year 69 received the full dose of 1,200 mg and 86 per cent were serologically negative and clinically well. Of another 107 patients receiving less than the full dose of mapharsen for one reason or another, 74 per cent apparently were cured.

Rightfully stimulated by the results, this form of therapy was immediately taken up by other workers in various centers. Thus Dr. D. C. Elliott of the United States Public Health Service reported to Dr. Herbert Rattner³ of Chicago that more than 1,150 patients had been treated by this method under the auspices of the Middle Western Cooperative Group, and still more recently Dr. R. A. Vonderlehr in a personal note said that some 1,700 patients had received the intravenous drip in a group of midwestern clinics through November

2. Hirschfeld, Samuel, Hyman H. T. and Wanger, Juliette R. Influence of Velocity on the Response to Intravenous Injections. *Arch. Int. Med.* 47: 284 (Feb.) 1931. Hyman H. T. and Hirschfeld, Samuel. The Therapeutics of the Intravenous Drip. *J. A. M. A.* 100: 395 (Feb. 4) 1933. Hyman H. T. and Touroff, A. S. W. Therapeutics of the Intravenous Drip (Further Observations). *End.* 104: 446 (Feb. 9) 1935. Chargin, Louis, Leifer, William and Hyman H. T. Studies of Velocity and the Response to Intravenous Injections. *ibid.* 104: 872 (March 16) 1935. Hyman H. T., Chargin, Louis and Leifer, William. A Five Day Arsenotherapy of Syphilis by the Intravenous Drip Method. *Five Year Observations.* *Am. J. M. Sc.* 197: 500 (April) 1939. Hyman H. T., Chargin, Louis, Rice, J. L. and Leifer, William. Mapharsen in the Treatment of Early Syphilis by the Intravenous Drip Method. *J. A. M. A.* 113: 1208 (Sept. 23) 1939.

3. Rattner, Herbert and Felt, A. B. Severe Arsenical Poisoning Encountered in the Five Day Treatment of Early Syphilis. *J. A. M. A.* 116: 1138 (April 19) 1942. Rattner, Herbert. Personal communication to the author.

1942 and several hundred more since Dr Rattner was one of the earliest to evaluate the possibilities of the technic. He has completed the study of 481 cases at the Cook County Hospital. His technic was above reproach and there were no fatalities, though he did observe an acute glomerulonephritis, anuria, uremia, hepatitis, ileus and pericarditis. There were also 3 cerebral reactions, 2 of them encephalopathy, fortunately all with recovery. Rattner observed 12 to 15 per cent of failures from one five day treatment and he believes this has been materially reduced in his later cases through simultaneous use of soluble bismuth—the latter with no added reactions. Dr Earl Osborne⁴ of Buffalo has thus far treated between 250 and 300 cases, the first 100 prior to Jan 1, 1942. There was 1 fatality from hemorrhagic encephalitis in a young healthy girl. There were 2 other near fatalities with recovery, 1 of them a male alcoholic. Dr Osborne quotes Dr Udo Wile with having made the keen observation that women either before or during the menstrual period should not be treated with the intravenous drip as at this time the vascular structures would be more affected by a vasculotoxic drug. He states that this was the condition with his patient. He feels that for a large city hospital clientele this is the preferred form of therapy. With other methods two thirds of the patients have absconded before the first year of treatment, whereas at the end of the first year the spinal fluid was not positive in any of his first hundred cases. There have been 2 infectious relapses and 3 serorelapses, a really remarkable result.

Dr Henry Michelson⁵ of Minneapolis, a very careful and skilled clinician, has had two deaths and one near death in 45 cases, making him rather hesitant about intravenous drip therapy. He feels it is too dangerous and that intervals between injections—perhaps with some form of combined fever therapy—is preferable. He leans more to biologic than to chemical therapy.

Drs Guy and Jacobs⁶ of Pittsburgh have treated 21 patients with no ill effects. Dr Udo J Wile⁷ of Ann Arbor states that he has thus far treated almost 200 cases over a period of two years. There have been no severe reactions and he is favorable to it as the best for rapid treatment procedures.

Dr Paul O'Leary⁸ of Rochester, Minn., has done no work with intravenous drip therapy, feeling that the incidence of serious complications and death was too great. Dr John Stokes⁹ of Philadelphia has done little with it. The personnel problem and setup were difficult for this additional endeavor along with the heavy teaching schedule. Moreover, an aplastic anemia almost in the inception of the work did not help his attitude. They are doing some work with chemotherapy plus fever, using Warren's bath tub technic, but here again the shortage of personnel is difficult. Dr Charles Denmie¹⁰ of Kansas City, Dr Joseph Earl Moore¹¹ of Baltimore and Dr Dudley Smith¹² of University, Va., have not been using the procedure. Dr Loren Shaffer¹³ of Detroit feels that the five day intensive therapy has a very definite place, particularly for the uncooperative

clinic type of patient, but does not think it is universally applicable in all cases of early syphilis. But more in regard to his views later.

Following the report of Baer, Chargin, Hyman, Leifer and others in November 1940 this form of treatment was employed in our City Hospital clinic on 5 patients with early syphilis. They were given daily injections of 1 mg of mapharsen per pound of body weight for five days. Half of the total dosage was dissolved in 500 cc of 5 per cent dextrose in distilled water and given by rapid intravenous drip every morning and afternoon. One patient experienced a rather severe headache after the second injection on each of the first three days of therapy. Aside from this there were no reactions.

Three of the patients have been followed for fifteen months or longer. All had strongly positive serologic reactions when the treatment was given. The serologic reactions became negative in from three to five months after the therapy. One was seronegative at fifteen months, another at eighteen months and another at thirty months after completion of the treatment. Two patients were lost from observation. Because of reactions observed in other centers the technic was discontinued for the time, even though we had had no difficulties.

Recently we have treated 5 patients with daily injections of 0.200 to 0.240 Gm of mapharsen in 2,400 cc of 5 per cent dextrose in distilled water by slow (twelve hour) intravenous drip for five days. All these patients experienced rather severe phlebalgia. Other than this there were no complications.

In August 1940, moreover, 6 patients with early syphilis were given daily injections of 1 mg of mapharsen per pound of body weight in 1,000 cc of 5 per cent dextrose in distilled water by rapid intravenous drip each morning for five days. There were no untoward reactions with this Shaffer technic, which will be described later.

Two patients have been followed for over two years. Both were dark field positive and seropositive when the therapy was given. The serologic reaction on both became negative forty to fifty days after the therapy and remained so twenty-four months later. One, who received a total of 600 mg of mapharsen, was examined thirty-two months after therapy and found to have strongly positive serologic reactions for syphilis but there were no signs of a secondary relapse. Four patients were lost from observation.

Stimulated by the results from the intravenous drip technic others have adopted a somewhat different technic, the idea in all of them being the introduction of as large and yet safe an amount of trivalent arsenical as the patient with acute syphilis can stand in a limited amount of time.

Thus Schoch and Alexander¹⁴ in Dallas, Texas, have treated over 350 patients. In the beginning they gave twenty daily intravenous injections of 0.060 Gm of mapharsen. However, the vast majority were treated with ten consecutive daily injections of mapharsen, each 0.120 Gm, the total dosage being 1.200 Gm. There was hemorrhagic encephalitis with death in 1 case and 2 other cases of mild encephalitis with recovery. The only other severe reaction was a case of icterus with recovery. Schoch's reappraisal of a group of 103

14 Schoch A G and Alexander, L J. Short Term Intensive Arsenotherapy of Early Syphilis. Preliminary Report. *Am J Syph* 25: 607-609 (Sept.) 1941. Intensive Arsenotherapy of Early Syphilis. Follow Up Report on the Ten Day Syringe Method of Treatment, *Arch Dermat & Syph* 46: 128 (July) 1942.

4 Osborne Earl. Personal communication to the authors.

5 Michelson Henry. Personal communication to the authors.

6 Guy, W H, and Jacobs, Fred. Personal communication to the authors.

7 Wile Udo J. Personal communication to the authors.

8 O'Leary, Paul. Personal communication to the authors.

9 Stokes John. Personal communication to the authors.

10 Denmie, Charles E. Personal communication to the authors.

11 Moore, J E. Personal communication to the authors.

12 Smith, Dudley. Personal communication to the authors.

13 Shaffer, Loren. Personal communication to the authors.

patients treated with the ten day syringe method, five months after the article was written, showed 83 per cent satisfactory results, 12 per cent failures and 15 per cent still remaining seropositive. They are now using the Eagle technic and think there is a greater margin of safety than with the ten day technic. It is his impression, however, from preliminary results, that they were better with his technic. Time will tell the story. They¹⁵ have since recorded 10 cases of rein-

TABLE 1—Detroit Plan (Early Cases Only)

- 1 Mapharsen (0.05 to 0.07 Gm according to body weight) three times weekly for twenty doses (six and two thirds weeks)
- 2 Bismuth subsalicylate 0.2 Gm twice weekly for eight doses (four weeks)
- 3 Mapharsen twice weekly for ten doses (five weeks)

fection. Four patients sustained reinfections following orthodox antisyphilitic therapy. The known period of clinical and serologic negativity was four and one-third years for 1 patient and greater than five for 3. Six of the 103 patients noted in the second report sustained reinfections following ten day intensive arsenotherapy for early syphilis (1.2 Gm of mapharsen). Dark field and quantitative reagin titer findings were furnished to support clinical observations. All the cases were observed by them in both infections and in 1 of them it was believed that there had been three infections in one year. The authors feel that, following intensive arsenotherapy, reinfection is more frequently observed than formerly.

Dr Loren Shaffer¹⁶ in Detroit tried five daily doses of approximately 1.2 mg of arsenoxide per pound of body weight administered in 1,000 cc. of 5 per cent dextrose and given by intravenous drip. This required about seventy-five minutes. The maximum daily dose was limited to 0.180 Gm and the total dose for the course ranged from 0.750 to 0.900 Gm. Some 430 cases have thus far been treated, there have been 2 cases of encephalitis, 1 of them fatal. Later the dosage of arsenoxide was slightly lowered. The incidence of encephalitis was about the same as has been observed with other technics. The incidence of relapses, both clinical and serologic, was somewhat high. In January 1942 an ambulatory intensive method¹⁶ of treatment was adopted by the Detroit Department of Health. It is used only for patients with primary and secondary syphilis who have refused hospitalization for five day treatment or have been considered poor risks. It calls for thirty mapharsen and eight bismuth injections over a period of approximately four months. It is too early to announce results of its use. Dr Shaffer has been one of the earliest and most vigorous proponents of intensive therapy for early syphilis.

With the Detroit plan (table 1) a spinal fluid examination should be made during the bismuth course or at least on the completion of treatment. After treatment is finished early cases are rechecked at monthly intervals for one year and early latent cases every three months. Thereafter, if negative, both types are checked every six months. Naturally, with early cases a complete physical examination is also in order. If the serologic reaction remains positive for one year, further study is in order.

Shaffer's plan is perhaps somewhat more intensive than the Army plan issued by the Surgeon General of the Army in circular letter 74. Much the same follow-up

and routine is used in the Army plan as with the Shaffer Detroit plan.

The Army plan (table 2) calls for forty mapharsen and sixteen bismuth injections in a period of twenty-six weeks.

Shaffer is already disappointed with the Detroit plan because of the high percentage of patients lapsing therapy. Consequently he thinks the five day hospital plan is preferable, though it is hardly suitable to all cases and must be carried out by expert personnel. He thinks that, until more experience can be gained, when one is dealing with the ordinary run of mine clinic patient, who is none too cooperative, either the Army plan or the Detroit plan should be adopted for general use.

Dr A. B. Cannon¹⁷ of the Vanderbilt Clinic in New York still has great faith in arsphenamine, and since July 1941 he has completed the treatment of 226 persons. The patients are hospitalized and of the 189 whom they have been able to follow 123 had negative serologic tests within a period of two weeks to one year, the average being three and one-half months. The plan of treatment has been changed four different times. The present one necessitates four daily intravenous injections of arsphenamine in concentrated form. The total dosage runs from 3.0 Gm minimum to 3.6 Gm maximum. Patients are started on large doses, getting almost half of their treatment in the first two days. There have been 2 cases of encephalitis, with survival in both, 2 of moderate neuritis and 3 cases of icterus, 1 of them a toxic hepatitis. There have been twenty-five mucorecurrences and two persisting serologic reactions.

Eagle and Hogan undoubtedly correctly approached the treatment of early syphilis by the experimental route,

TABLE 2—Army Plan (For Early and Latent Cases)

Mapharsen		Bismuth	
Week 1		Week 1	
2		2	Bismuth subsalicylate
3		3	0.2 Gm intramuscularly
4	Mapharsen intravenously	4	once weekly 5 doses
5	0.06 to 0.07 Gm adjusted		
6	to weight twice weekly for		
7	10 weeks total 20 injections		
8			
9			
10			
11		11	
12		12	
13	Omit mapharsen	13	Bismuth as above once
14	6 weeks	14	weekly for 6 doses
15		15	
16		16	
17			
18			
19			
20			
21	Mapharsen as in first	22	
22	course twice weekly total	23	Bismuth as above
23	20 injections	24	once weekly for
24		25	5 doses
25		26	
26			

working with rabbit syphilis. It would be impossible in this paper to review all the work they have done.¹⁸ While rabbit syphilis is not necessarily human syphilis, a great number of the truths applicable to the one will

17 Cannon A. B. Personal communication to the authors.

18 Eagle Harry and Hogan R. B. The Intravenous Drip and Other Intensive Methods for the Treatment of Syphilis, Science 93:377 (April 3) 1942. Eagle Harry Hogan R. B. and Kemp J. E. The Importance of the Time Factor in the Evaluation of Cure in Syphilitic Rabbits. Am. J. Syph. Gonorr. & Ven. Dis. 26:55 (Sept.) 1942. Eagle Harry and Hogan R. B. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. I. Toxicity and Efficacy. Ven. Dis. Inform. 24:33 (Feb.) 1943. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. II. Therapeutic Efficacy and Margin of Safety. Ibid. 24:69 (March) 1943.

15 Schoch A. C. and Alexander L. J. Reinfection in Syphilis. Am. J. Syph. Gonorr. & Ven. Dis. 27:15 (Jan.) 1941.
16 Shaffer Loren W. and Salschow P. T. Report of Social Hygiene Division. Detroit Department of Health. September 1942.

apply with the other and vice versa. One very important item that they have brought out is with regard to "cure" in rabbit syphilis. They find that "until time limits within which infectious relapse may occur in the rabbit have been more clearly defined the absolute curative dose of arsenicals in rabbit syphilis cannot be determined by lymph node transfer."

Even data as to the relative efficacy of various treatment procedures must be interpreted in the light of the time allowed to elapse between treatment and the following lymph node transfer. Their study showed that six months after treatment in a large series of rabbits, apparently cured at three months as judged by node transfer, 37 per cent of them were still infectious. Apparently the disease was actually quiescent at three months after treatment but not cured. Is there a lesson for us in this in considering human syphilitic therapy? They find in rabbit syphilis that the time factor has much to do in determining the toxicity of a treatment system. Thus the same treatment of syphilis may be intensified, the treatment period may be shortened by various methods, but they have definite and predictable effects on the margin of safety. In the short term intravenous drip, treatment is concentrated within a few days but the mapharsen is given in a continuous slow infusion for many hours daily. Such a slow infusion is less toxic than single daily syringe injections of the same amount of mapharsen but it is only slightly less toxic than multiple syringe injections (e. g. four times daily) distributed over the same time period. Moreover, in rabbits the therapeutic efficacy of mapharsen given by slow intravenous drip was usually less than if the same amount of the drug was given by repeated syringe injections whether triweekly, daily or four times daily. Another method of intensifying treatment is to give the same number of injections but at shorter intervals. Thus, instead of twenty weekly injections one may give injections three times weekly for seven weeks daily for twenty days or twice daily for ten days. It is clear that, the shorter the time interval between injections, the more pronounced will be their cumulative toxicity. The intravenous drip was significantly less effective than multiple syringe injections administered over the same time period in rabbit syphilis. An appreciable condensation of treatment beyond that permitted by triweekly, daily or multiple daily injections can be accomplished only at the cost of safety by an arbitrary decrease in the total number of injections.

Eagle and Hogan have suggested a clinical adaptation of their studies in human beings with early syphilis. The patients are given a weekly intramuscular injection of bismuth subsalicylate 0.2 Gm and triweekly intravenous injections of mapharsen for six, eight, ten or twelve weeks. Thus far March 5, between 1,900 and 2,000 patients have been treated at various cooperating clinics throughout the country. In the Cleveland area we have treated the patients at the University Hospital and Charity Hospital with the eight week method and at the Cleveland City Hospital with the ten week method. Naturally it is too early to evaluate the results of this therapy, though it appears to be quite promising. The great difficulty has been to keep the patients on regular treatment. At the first two institutions a total of 114 patients have thus far been treated and at the City Hospital a further 95, of whom 107 have completed their course of treatment. Of these 22 missed no treatments, 34 missed one to five treatment days, 20 missed six to ten treatment

days and 31 over ten treatment days, a total of 107 patients. Unfortunately 34, or 16.2 per cent, have already been lost from observation or treatment, fortunately, 11 of these were after completion of therapy, but this does not help future evaluation of the data. Moreover, in 12 of the cases under the eight week regimen and in 12 under the ten week regimen it has been necessary to discontinue the treatment because of reactions. Seventeen were much alike, characterized by nausea, vomiting, general malaise, photophobia, chills and fever from 39 to 40 C (102.2 to 104 F). Shortly after onset of the symptoms the patients showed some conjunctival injection and edema of the face. These symptoms came on after the fifth or sixth injection and from nine to twelve days after the first injection of mapharsen. One patient developed an icterus lasting fifteen days. Another patient after the fifth injection developed a daily asymptomatic, spiking temperature to 39.5 C (103 F). He was found to have moderately far advanced pulmonary tuberculosis. Following this case a preliminary chest plate was taken in all cases on intensive therapy.

To illustrate what we speak of as our "fever-conjunctival injection-facial edema syndrome"

A Negro woman with early mucocutaneous syphilis was started on intensive therapy on July 9, 1942. After the fifth injection of 0.06 Gm of mapharsen she had a slight headache. Several hours after the sixth injection of mapharsen she developed nausea and vomiting followed by circumocular edema, conjunctival suffusion, headache, weakness and fever of 39 C (102.2 F). It then took five days for her fever to subside. A week after onset of this reaction she received 0.01 Gm of mapharsen with immediate recurrence of the previous symptoms. Twelve days after this reaction 0.1 Gm of neoarsphenamine intravenously produced the same reaction and, in addition, profound muscular weakness. She recovered from this fairly well over the period of a week. Subsequently she received eight injections of iodobismutol every week. Three months after the original reaction 0.01 Gm of mapharsen produced no untoward result. A few days later she moved to Kansas and has not been heard from since.

There has been one relapse at City Hospital, mucocutaneous in type in a woman who during the course of treatment missed thirteen treatment days. There was also one in a woman under the eight week regimen. She also had missed twenty-four treatment days.

There is a further meningitic type of relapse.

A man aged 57, an Italian, was seen with a chancre and early mucocutaneous syphilis which was dark field positive. At the beginning of therapy on July 16, 1943 his Wassermann and Kline reactions were 4 plus. He then received regular therapy for eight weeks with the exception of one visit, which he lapsed. At the completion of therapy his Wassermann reaction was 4 plus, Kline diagnostic 1 plus and Kline exclusion 3 plus. Six weeks after therapy his Wassermann reaction was 1 plus, Kline diagnostic negative and exclusion 2 plus. Two months after therapy his Kline diagnostic and exclusion reactions were negative. Seven weeks after therapy his spinal fluid showed 300 cells, positive Ross Jones, 432110 colloidal mastic curve and 4 plus Wassermann reaction in 0.5 and 1.0 cc.

FEVER THERAPY IN SYPHILIS

We now come to another milestone in the therapy of syphilis—fever treatment. Wagner Jauregg was the first to use a form of hyperthermia, malaria for treatment of dementia paralytica. Later this treatment was tried in early syphilis and found to be unsuccessful. From malaria therapy we have drifted to the use of other fever producing implements, foreign protein therapy, e. g. typhoid-paratyphoid intravenous injections, hot baths, the inductotherm and the hypertherm. The

value in central nervous system syphilis is unquestioned, and investigators have naturally turned to them in the treatment of early syphilis. It was an American dermatologist, J F Schamberg,¹⁹ who as long ago as 1926 reported the beneficial effects of hot baths in experimental rabbit syphilis. In 1935 Epstein and Cohen²⁰ and in 1936 Neymann, Lawless and Osborne²¹ found such treatment to be ineffective in human syphilis. This has been confirmed by Boak, Carpenter, Jones, Kampmeier, McCann, Warren and Williams²² and by Simpson, Rose and Kendall.²³ However, when this fever therapy is combined with chemotherapy it may be a different story. The interested reader may consult the recent review of Simpson, Kendall and Rose.²⁴ These authors²⁴ have a group of 27 patients with early syphilis observed for four to eight years who have had no clinical or serologic relapse. They received fever therapy consisting of either twelve three hour or ten five hour sessions (rectal temperature 105 to 106 F) administered once or twice weekly. With each treatment an arsenical preparation (nearsphenamine 0.3 Gm or mapharsen 0.04 Gm) and a bismuth compound (containing 0.2 Gm of metallic bismuth) were administered. Following the fever therapy, injections of the chemotherapeutic agents were continued for an additional twenty weeks, injections of the arsenic and bismuth being concurrent. They further report on a series of 23 patients observed from six months to two and one-half years. The patients were given a preliminary injection of 0.25 Gm of bismuth subsalicylate, then placed in a hypertherm and given a ten hour session of artificial fever at 106 F. Mapharsen was used in all the cases. Two patients received 240 mg by intravenous drip during the period of fever at 106 F. This was abandoned in favor of administration of injection by the syringe method in 60 mg doses at intervals of three hours. Six patients were given two injections (120 mg), five received three injections (180 mg) and 3 received four injections (160 mg). The first injection was given when the rectal temperature first reached 106 F, the second at the end of the third hour, the third at the end of the sixth hour and the fourth at the end of the ninth hour. No other treatment was given. Serologic reversal was dependent on the height of the initial pretreatment titer. It occurred in from twenty-one to one hundred and seventy-six days. The authors state that the number of patients is small and the period of observation insufficient to permit adequate clinical evaluation. They believe, however, that the results are sufficient to justify further investigation. There can be little doubt about the value of their observations, and they are to be congratulated on their conservative approach. As we understand it a quite similar procedure is being carried on by Dr Nathaniel Jones and

S L Warren²⁵ at the Duval County Hospital, Jacksonville, Fla., where they have treated well over 100 cases, and at the Chicago Intensive Treatment Center under the direction of Dr H Worley Kendall,²⁶ where they have in a period from October 1942 to date treated a total of 350 or 400 patients. At the latter institution treatment consists in eight hours of fever at 105.6 to 106 F and there is given arbitrarily to men 0.090 Gm of mapharsen and to women 0.060 Gm. One third of the mapharsen is given when the temperature reaches its height and one third at approximately three hours and six hours afterward. They also administer 1.5 cc of 10 per cent suspension of bismuth subsalicylate before treatment is started in the morning. Dr Kendall furnished the information thus far available and urges extreme conservatism until sufficient material has been treated and carefully evaluated. He is quite emphatic that their work is still in the experimental stage. They plan on gradually increasing the dosage.

• THE COMBINED SYRINGE METHOD THERAPY PLUS FEVER

In 1937 Thomas and Wexler in New York City²⁷ increased the number of injections of mapharsen from one to two a week and by 1938 to three a week for four weeks for all patients with early infectious syphilis. In the light of the intensive therapy they determined to attempt rapid massive treatment without the continuous drip—their facilities at Bellevue did not easily allow the latter. Later they stepped up their dosage still further, using the standard syringe method for injection, giving at first 0.060 Gm of mapharsen twice daily for ten days, the same dose, 1.200 Gm, used by the Mount Sinai group. Later they tried 0.100 Gm twice daily, which worked nicely until the 111th patient, who had a fatal encephalitis. Since then they have endeavored to keep the total dosage of mapharsen under 0.800 Gm in a period of ten days. Dr Thomas feels, however, that such a dosage to be therapeutically effective must be supplemented with fever. He states that the program they have used now for six months and which is quite satisfactory consists of ten daily injections of mapharsen 0.060 Gm each with four fevers induced by typhoid vaccine. The fevers are given as a rule on the second, fourth, sixth and eighth days. The dosage is varied somewhat according to weight. Originally Thomas felt that fever prevented toxic reactions²⁸ of arsenical drugs. He later reversed this opinion.²⁹ Dr Thomas thinks that intravenous drip therapy has no advantage over the syringe technic and certainly their results are even as good. Intravenous drip therapy is also probably more toxic. He has also treated 50 patients with Eagle and Hogan's three injections of mapharsen a week for six or eight weeks. He thinks the treatment is therapeutically effective but that it is a most unsatisfactory plan and unpractical in their work, in which they have so many Negroes and irresponsible patients. To this we heartily agree. All their work has been most painstaking, very carefully planned and carried through and presents a most convincing argument in favor of the syringe technic plus fever treatment.

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COMMENT

It is fair to say that from the data given here evidence is presented showing that early syphilis is being cured by intensive treatment methods, whether it be intravenous drip, the syringe technic, multiple injections of Eagle, or fever therapy and intravenous drip or syringe treatment plus fever. The patients are not only cured but, as Schoch and Alexander show, they are even being reinfected in appreciable numbers.

Stokes³⁰ has recently reviewed the difficult problem. He points out that a new system of treatment of syphilis must equal or surpass the curative expectancy of the older ones, lead to less infectious relapses, cure more mothers and protect more children and lessen the incidence of cardiovascular and central nervous system syphilis. On the other hand, when we talk about the relatively benign character of much early syphilis, 40 to 50 per cent, and the fact that with relatively small amounts of treatment, if it doesn't disturb the defense mechanism, this may even be raised to as high as 70 per cent, here we are completely ignoring the public health problem of syphilis, especially in wartime. He quite properly insists that evaluation of a system of treatment requires two to four years as far as relapse is concerned and ten years for evidence of progression. A new system must be cheap and rapid, control the lapse problem and allow treatment of more persons per unit of time, personnel and equipment. All these arguments are, of course, in favor of intensive methods though, as Stokes notes, the man cured with intravenous drip or with fever plus chemotherapy must be followed afterward even as much as his lady friend treated by the longer but safer eighteen months method. And too he states that with intensive methods wherein patients are even paid for follow-up visits the loss rate is 17 per cent and in some clinics 6 to 20 per cent up to six months. He thinks that long term treatment in the modern syphilis clinic is carried through in 25 per cent of the early cases and 50 per cent ultimately receive satisfactory irregular treatment. Moreover, that in really good clinics with effective case holdings it may be raised to 50 per cent with 70 to 80 per cent ultimately receiving satisfactory irregular treatment. In this connection one should remember that we are not dealing with a half dozen top clinics but with the run of mine clinic throughout the United States. How well is this clinic holding its cases? It is not necessary to answer the record is bad, spelled with a capital B. He is probably right in his contention that the percentage of relapse is about the same with intensive methods as with conventional treatment. We agree that for the present, at least, intensive therapy should be reserved for relatively acute syphilis—not later than early latent.

We now come to the real problem with intensive methods. Stokes says that for 4,871 patients treated with all the intensive methods there was a mortality of 1/220 and a morbidity of nonfatal encephalitis of 1/160. Shaffer makes the figure for mortality 0.3 per cent. It is true that with older methods encephalopathy is very rare, he puts it 1/20,000. He also adds that deaths from mapharsen are thus far only 6 after administration of millions of doses. He thinks that the death rate is probably one hundred to two hundred times that from older methods. In reply to this we must add the ultimate mortality or morbidity of an enormous number of early uncooperative syphilitic patients who take a few treatments and lapse. And too, how many

new infections do they pass on and thus keep the syphilitic ball rolling? How many mothers and how many babies are infected by them before their disease gets so old that it is no longer transmissible? Moreover, would not such an intensive technic be a partial answer to our expert help problem in our clinics? The patient receives his treatment and then is through except for follow-up and occasional examinations.

Vonderlehr and Usilton³¹ have recently analyzed the 1,895,778 serologic reports of men aged 21 to 35 who were examined under the Selective Service Act of 1940. The rate of prevalence of syphilis among the entire male population between 21 and 35 is estimated to be 47.7 per thousand. However, the rate of prevalence among Negro selectees is 253.3 per thousand and among white selectees 17.4 per thousand. Moreover, if one turns to urban centers in the South it is found that the rate of prevalence among Negro men ran 413 per thousand in Florida, 407 in Georgia, 358 in Arkansas, 339 in Maryland, 431 in Mississippi, 384 in Texas, 417 in South Carolina, and so on. Unfortunately, these data present the crux of the whole syphilis problem. The rate of prevalence is highest among the most ignorant and least cooperative part of our population. In the Cleveland district it is just this portion of our patients that are hardest to hold, that are easiest lost in fact so effectually that even their draft boards cannot find them. The common complaint from all workers in syphilotherapy is difficulty in holding the uncooperative patient. A few treatments and he is gone.

With those forms of treatment in which the patient is hospitalized and receives his full complement we are at least sure that he or she has this under his or her skin. True, a certain number will relapse, but this is a small number compared to the number lost under any routine form of treatment. Moreover, we are in the midst of a world war in which public health problems, especially regarding syphilis, are paramount. It is our opinion that at least for the duration all such uncooperative patients with early syphilis as come to our public health clinics should be hospitalized and treated by intensive methods, i. e. the intravenous drip, the Schoch method, the hypertherm treatment plus intravenous medication or by the Thomas and Wexler method. Stokes thinks the future should look to the multiple dose technic of Eagle and Hogan or to a combination of two or three sharp prolonged pyrexial rises with massive dose mapharsen therapy by drip or multiple injections. For such patients as are seen in our clinics the answer, in our opinion, is not to be found in the Eagle technic—the patient must be hospitalized and treated while we have him and for that reason the Thomas and Wexler technic with daily injections of mapharsen 0.060 Gm. plus intravenous typhoid-paratyphoid on the second, fourth, sixth and eighth days, the five day intravenous drip perhaps with added soluble bismuth intramuscularly, or the hypertherm plus intravenous chemotherapy are preferable. It stands to reason that such therapy should be administered only by experts in the field, trained to meet any emergency. Attempts at this type of therapy by the tyro can only lead to disaster. Moreover, such therapy requires a competent house staff and nursing staff skilled in handling such cases. The next few years are going to do much in answering this great problem—the intensive therapy of syphilis. And apparently, American medicine is at the fore in handling this grave question.

³⁰ Stokes, John. The Wartime Control of Venereal Disease. *J. A. M. A.* 120: 1093 (Dec. 5) 1942.

³¹ Vonderlehr, R. A. and Usilton, Irma J. Syphilis Among Men of Draft Age in the United States. *J. A. M. A.* 120: 1367 (Dec. 26) 1942.

THE SYNTHETIC ESTROGEN OCTO-
FOLLIN (IN OIL)

REPORT OF CLINICAL INVESTIGATION

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Although there is no doubt concerning the efficacy of estrogen therapy in the female climacteric, there is considerable uncertainty about the optimal preparation to be used. The criteria for effective treatment are two: subjective relief and vaginal smear response. To the practitioner interested primarily in the welfare of his patients the relief of symptoms is of more importance, and rightly so, than the results of any objective tests which may be made. Until such time as some investigator has at his disposal a group of young women from whom all ovarian tissue has been removed by surgical means, evaluation of the activity of estrogens in human therapy by the vaginal smear technic can never be a precise laboratory procedure. It is true, of course, that some estimate of the degree of response to the therapy can be gained by the smear technic, and we have used such tests to supplement our subjective findings. In choosing an estrogen the physician must consider also other factors—cost (to him or to the patient) of adequate therapy and the extent to which toxicities or side reactions occur following oral or parenteral therapy.

There would seem to be nothing to be gained by a lengthy discussion here of the voluminous literature representing the experiences of investigators and clinicians with diethylstilbestrol. The report of the Council on Pharmacy and Chemistry¹ together with the review articles mentioned therein must be familiar to all workers in the field. It would appear to be universally accepted that diethylstilbestrol is a remarkably effective estrogenic drug when administered either orally or parenterally. There has been considerable controversy, however, over the degree to which toxicities or side reactions are manifest during the administration of this synthetic estrogen.

During the last year I have been using a new synthetic estrogen, octofollin,² on a large group of climacteric patients. This compound, which is not a derivative of stilbestrol, has the chemical name 2,4-di-(para-hydroxyphenyl)-3-ethyl hexane. The steps leading to the development of this compound have been outlined by Blanchard, Stuart and Tallman,³ and reports of the physiologic studies of this estrogen were presented in 1942 from the same laboratory.⁴ Freed and his co-workers,⁵ and Greenhill⁶ reported satisfactory results with this compound in menopausal patients and indicated that it was much less toxic than stilbestrol or hexestrol. Murphy⁷ reported that satisfactory results have been obtained with the use of octofollin in the relief of the symptoms of the menopause, in gonorrheal vaginitis in children and in the suppression of lactation.

Jaeger and his co-workers⁸ mentioned its use in gonorrheal vaginitis and believed it to be a most efficient estrogen.

EXPERIMENTAL MATERIAL AND RESULTS

It was my intention at the outset to test the efficacy of octofollin both by oral and by parenteral administration. At the start, the memory of side reactions with stilbestrol therapy resulted in overcaution in the oral administration of this new synthetic, and as a consequence the clinical response was not encouraging. However, not one of the patients reported any untoward reaction of any kind during the course of therapy. The average daily dose by mouth in this series of patients was 10 mg. Therapy with octofollin in oil was begun by deep intramuscular injection and the results were very satisfactory. In all the cases to be reported here the estrogen was administered by this route. Therapy was given to a series of 21 women with various symptoms indicative of estrogen deficiency. The summary of the results on these cases, giving dosage data, is given in the accompanying table. Not one of these patients ever demonstrated any toxic symptoms or local reaction at the site of injection. Gastrointestinal disturbances which were not at all uncommon with diethylstilbestrol were absent, and there was no evidence of pelvic pain or discomfort, no vaginal bleeding during therapy and no dermatitis. The amount and frequency of the dosage are determined by the type of patient and the severity of the symptoms.

The cases in this series ranged from mild menopause types to those with the more severe symptoms of the surgical menopause. The majority of the patients had similar symptoms with an average degree of severity.

In the accompanying table the five starred patients had liver function tests. Four of these showed completely normal function both before and after considerable therapy. The fifth patient, D. M., having latent syphilis and chronic cholecystitis, exhibited a 2 plus cephalin flocculation test at the beginning of the therapy and there was no change following six months of octofollin therapy.

Vaginal smears were done on all the patients shown in the table. I have been using the iodine staining reaction as a measure of estrogen response. In the majority of cases there was a moderate to pronounced reduction in the number of iodophilic cells before therapy. Following therapy there was an improvement in the appearance of the smear in almost all cases although complete cornification was observed in but 2 cases. It is quite apparent that definite, or complete, relief of menopausal symptoms can follow estrogen therapy without the necessity of producing completely cornified vaginal smears.

Space does not permit the insertion of detailed protocols on all the patients. One typical protocol is given here, however, with the idea that it will give a better idea of the way in which treatment was carried out on the average patient.

E. W. white aged 44 except for a sacroiliac strain and some hypertrophic arthritis of the sacroiliac joint had no illness or operation. When first seen in October 1941 the patient complained of low backache, also spells of hot flashes and vertigo exhaustion and at times some precordial discomfort. The physical and x-ray examination revealed no serious pathologic condition however there was some moderate hypertrophic reaction of the right sacroiliac joint. The Kahn reaction, blood count and urinalysis were essentially negative. Liver function tests

¹ Diethylstilbestrol. Report of Council on Pharmacy and Chemistry. J. A. M. A. 110: 632 (June 20) 1942.

² Octofollin is a development of the Research Laboratories of Schiefelbusch Company, New York and was supplied through the courtesy of Dr. E. W. Blanchard of that organization.

³ Blanchard E. W., Stuart A. H. and Tallman R. C. Endocrinology to be published.

⁴ Blanchard E. W. Endocrinology 30: S1026 (June) 1942. Stebbins A. B. and Blanchard E. W. Ibid. 30: S1041 (June) 1942.

⁵ Freed S. C., Fison W. M. and Greenhill J. P. J. Clin. Endocrinol. 2: 213 (April) 1942.

⁶ Greenhill J. P. Am. J. Obst. & Gynec. 44: 475 (Sept) 1947.

⁷ Murphy J. A. Am. J. Obst. & Gynec. to be published.

⁸ Jaeger A. S., Morning W. P. and Foxman C. V. L. I. Cutan. Rev. 4: 71 (Feb.) 1947.

were made. The cephalin-cholesterol and bromsulphalein tests were negative, and four weeks after the use of the synthetic estrogen octofollin the tests still showed completely normal liver function. The menstrual history was normal. In the past six months the periods had been growing more scanty and becoming a little irregular. Vaginal examination showed a perfectly normal cervix and fundus and no evidence of tumors or inflammation. The vaginal smears revealed quite a few round or oval atrophy cells.

The patient received therapy of natural estrogenic hormone 10,000 international units parenterally twice a week for six injections. This was followed by a definite symptomatic improvement for four or five weeks. The vaginal smears made during the time of greatest improvement showed little cornification with the atrophy cells still present to a moderate degree, notwithstanding the subsidence of clinical symptoms. With the

The hypertension which seems to be present in certain menopause patients seemed also to be improved with octofollin therapy. This is particularly noted in one patient, M. L. M. in the table, whose blood pressure before the start of treatment varied between 180/110 and 200/120. After three months of therapy the blood pressure was 150/90 to 160/98. Similar decreases in blood pressure, though less striking, were noted in other patients in this series.

COMMENT AND CONCLUSIONS

Octofollin in my experience provides prolonged beneficial effects. This means sustained as well as additional comfort for the menopausal patient.

Summary of the Clinical Results of the Investigation of the Action of Octofollin

Patient	Age	Conditions and Symptoms for Which Treatment Was Given	Dose and Frequency	Clinical Results
G. H.	45	Natural menopause, hot flashes, sweats, palpitation	2 mg twice a week for 3 weeks then 2 mg once a week for 6 weeks	Almost complete control of symptoms
E. G.	44	Postoperative menopause hot flashes, depressed feeling, exhaustion	5 mg twice a week for 4 weeks then 5 mg once a week for 8 weeks	Complete control of symptoms
C. W.	37	Early menopause scanty irregular periods hot flashes, nervousness, low basal metabolic rate	2 mg twice a week for 3 weeks, then 2 mg once a week for 5 weeks	Complete control of vasomotor disturbances
G. I.	48	Natural menopause, menses irregular, hot flashes, depression	2 mg once a week for 8 weeks	Pronounced clinical improvement in symptoms
H. DeV.	38	Approaching menopause, scanty periods precordial pain and heart consciousness	5 mg once a week for 5 weeks, then 5 mg every 2 weeks for 3 months	Almost complete control of symptoms
H. M.	54	Postmenopausal no hot flashes but pressure pain in head and neck	5 mg once every 2 to 3 weeks	Complete control of subjective symptoms
P. W.	42	Dilation and curettage and x-rays to uterus for menorrhagia following this depressed feelings and backache no flashes	5 mg once a week for 4 weeks then 5 mg once every 2 to 4 weeks	Partial relief of exhaustion and backache
E. S.	30*	Hot flashes and exhaustion following high voltage x-rays	2 mg once a week for 7 weeks	Complete relief of symptoms after 4th dose and no return of symptoms until 3 months after last injection
E. S.	46*	Natural menopause severe and frequent hot flashes day and night	5 mg twice a week for 3 weeks then once a week for 4 weeks now once every 4 to 6 weeks	Complete control of symptoms vaginal smear returned to more normal appearance
C. M.	52	Menopause menses scanty and irregular severe hot flashes sweats and choking feeling palpitation of heart	5 mg twice a week for 1 month, then once every 1 to 2 weeks for 4 months	Complete control of symptoms with the frequent doses and fair control with doses every 2 weeks
L. D.	47	Menses irregular and infrequent for past year exhaustion, nervousness and few hot flashes	5 mg a week for 1 month then 2.5 mg every 2 to 3 weeks	Satisfactory control of subjective symptoms and improvement in vaginal smear
R. A.	52	Two year postmenopausal, exhaustion and pressure in head	5 mg once every 4 to 6 weeks as necessary	Almost complete control of symptoms for 4 to 6 weeks with one 5 mg dose
M. H.	52	Hysterectomy in 1934 hot flashes and vaginal irritation since in varying degree	5 mg every 1 to 2 weeks for 3 months then once a month	Quite complete relief of symptoms if dose is given once a month
F. W. H.	52	Menopause severe hot flashes since menses ceased in 1941 headache and bloating	5 mg a week for 12 weeks then once a month	About 50 per cent relief in subjective symptoms
N. B.	36	Hysterectomy in 1941 severe and frequent hot flashes in 1942	5 mg a week for 1 month then every 2 to 4 weeks	Satisfactory relief of hot flashes for 2 to 4 weeks with 5 mg
R. B.	33	Miscarriage in 1941 followed by dilation and curettage, hot flashes and depression began in 1942	5 mg twice a week for 8 weeks then once a week for 2 months	Hot flashes stopped after 2-4 days after first injection relief of depression with 20 injections
H. V. D.	40	Hot flashes, depression and irregular menses	2 mg once a week for 2 months	Quite satisfactory reduction in symptoms for 6 months after treatment
M. L. M.	51*	Menopause infrequent and scanty menses, hot flashes	5 mg once a week for 1 month then every 2 to 5 weeks for past 4 months	Almost 100 per cent relief of hot flashes
D. M.	50*	Menopause hot flashes, latent syphilis, treated chronic cholecystitis intolerant to diethylstilbestrol	2 to 5 mg at irregular intervals	Control of hot flashes with 2 to 5 mg for varying lengths of time, menses will stop hot flashes 2 to 3 weeks
E. W.	44*	Early menopause hot flashes night sweats dizzy intolerant to diethylstilbestrol	2 mg twice a week for 1 month then 5 mg a week for 6 to 8 weeks	Complete relief of symptoms, complete cornification of vaginal smear
H. L.	44	Early menopause flushing sweating headaches	2 mg twice a week for 6 weeks then 2 mg a week for 6 weeks	Gradual and complete in 6 weeks with cornification

return of symptoms such as hot flashes and vertigo the patient was placed on diethylstilbestrol orally 0.5 mg per day. The symptoms subsided within a few days, but the patient became nauseated and had a sense of soreness and fullness of the breasts after eight days, so that it became necessary to discontinue the therapy. The injection of diethylstilbestrol 0.5 mg twice a week also gave clinical improvement but also created the toxic symptoms as before and was discontinued.

In May 1942 the patient was placed on injections of the synthetic estrogen octofollin, receiving 2 mg twice a week for one month without there being the least sign of toxic symptoms. She received thereafter 5 mg a week and later every two weeks for two months more. Complete relief of hot flashes, sweats and dizziness resulted and the patient generally was better after the fourth injection. This improvement continued for over six months without further injection and with no return of symptoms. An apparent improvement in the arthritic condition was also reported by the patient.

Undesirable side reactions, such as headache, nausea, vomiting, dizziness, soreness of the breasts, pelvic pain and excessive or frequent uterine bleeding, were not encountered in my experience. Such reactions were encountered frequently in therapy with diethylstilbestrol both by the oral and by the parenteral routes of administration.

In general also there seemed to be quite a decided improvement in the vague arthralgias and hypertension associated with the menopausal syndromes in this series of patients.

The results given here indicate that the new synthetic estrogen octofollin, when administered parenterally in oil to menopausal patients, is an effective estrogen and is nontoxic in therapeutic doses.

OCTOFOLLIN, A NEW SYNTHETIC
ESTROGEN

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ST LOUIS

Since Dodds and his associates¹ synthesized the estrogenic substance diethylstilbestrol in 1938 numerous clinical studies have demonstrated that this compound is a powerful and therapeutically effective estrogen when administered either by injection or by mouth. Many investigators have shown that it may produce some undesirable reactions. The commonest clinical objection to diethylstilbestrol has been nausea, and in various series from 10 to 60 per cent of the patients treated have complained of this possibly toxic reaction. Usually nausea can be avoided by reducing the dose,² by giving the medication at bedtime,³ or by using interrupted treatment.⁴ A few patients do not tolerate even small doses, and Finch⁵ has suggested that nausea may be an allergic reaction. Infrequent occurrence of vomiting, headache, vertigo, abdominal distress, diarrhea or dermatoses has been reported following the administration of diethylstilbestrol. Thus the dosage, and therefore the therapeutic effectiveness, of this synthetic estrogen is limited to some extent by possible toxic gastrointestinal disturbances and occasionally by other side reactions.

Attempts have been made to produce stilbestrol modifications and to synthesize other estrogenic compounds which would not cause nausea or the other untoward symptoms sometimes occurring with diethylstilbestrol. Geschickter and Byrnes⁶ demonstrated that stilbestrol monomethyl ether is an estrogen of clinical value, and Elden⁷ reported that only 10 per cent of his patients received no benefit from this medication. Abarbanel,⁸ however, found that when stilbestrol monomethyl ether was given in doses estrogenically equivalent to those of diethylstilbestrol the incidence of nausea was similar with the two compounds. According to Bieren and Compton,⁹ dihydrostilbestrol (hexestrol) is a powerful estrogen, but its effective dose in adults was ten times that of diethylstilbestrol, and nausea occurred in over 8 per cent of their cases.

New synthetic estrogens which are not related to the natural estrogens or to the stilbenes have been reported recently. Robson and Schonberg¹⁰ dem-

onstrated that triphenylethylene produced complete estrous response in ovariectomized mice and found this preparation to have a prolonged effect. Later these authors reported good estrogenic effect in animals with *aa*-di-(*p*-ethoxyphenyl)- β -phenyl bromoethylene.¹¹ Macpherson and Robertson¹² in 1939 announced that triphenyl chorethylene had estrogenic activity. They recommended that the dose of this compound for adults be 200 mg daily. The duration of action was approximately that of diethylstilbestrol, and no nausea or other side reactions were observed.

SYNTHESIS OF OCTOFOLLIN

Blanchard¹³ studied the response of rats to a new synthetic estrogen, 2,4-di(parahydroxyphenyl)-3-ethyl hexane, later named octofollin. This compound is not related to stilbestrol. He found that it produced responses in rats similar to those elicited by the natural estrogens except that it was highly active when administered by mouth. Certain natural and synthetic estrogens when given parenterally or orally in large repeated doses will produce hypoplasia of the bone marrow of dogs.¹⁴ Stebbins and Blanchard¹⁵ observed hypoplasia of the bone marrow of rats receiving either a natural estrogen, diethylstilbestrol, or octofollin. The incidence and degree of the hypoplasia of the bone marrow was not as great with octofollin as it was with either of the two other estrogens.

Freed, Eisin and Greenhill¹⁶ found satisfactory therapeutic response to this new synthetic estrogen in patients receiving 10 to 25 mg daily. Results were judged chiefly by the relief of hot flashes. They reported nausea in only 3 of a small series of cases.

In 1940² and again in 1941⁴ two of us summarized our studies with diethylstilbestrol in which the subjective, objective and possible toxic responses of patients to the medication were investigated. We report here a similar study with the new synthetic estrogen octofollin.¹⁷

CLINICAL MATERIAL AND METHODS

During the past fourteen months we have treated over 60 persons having estrogen deficiency with octofollin. Forty-four case studies are analyzed in this report, since the attendance of the remaining patients at the clinic was irregular. Of the 44 women, 30 suffered from symptoms of spontaneous menopause, 11 from artificial menopause following operation, and 3 from primary hypogonadism. No patient was treated who did not complain of severe symptoms of vasomotor instability.

The subjective symptoms of each patient were analyzed as carefully as possible and recorded in specially prepared charts prior to and during the admin-

From the Department of Medicine, Washington University School of Medicine and the Washington University Clinics.

¹ Dodds E C, Goldberg L, Lawson W and Robinson R. Estrogenic Activity of Certain Synthetic Compounds. *Nature* London **141**: 247 (Feb. 5) 1938.

² MacBryde C M, Freedman Harold, Loeffel Ellen and Castrodale Dante. The Synthetic Estrogen Stilbestrol. *J A M A* **115**: 440-443 (Aug. 10) 1940.

³ Rock John and Menkin M F. Stilbestrol. *New England J Med* **227**: 552-556 (Oct. 8) 1942.

⁴ MacBryde C M, Castrodale Dante, Loeffel Ellen and Freedman Harold. The Synthetic Estrogen Stilbestrol. *J A M A* **117**: 1240-1242 (Oct. 11) 1941.

⁵ Finch J W. The Nausea and Vomiting Following Administration of Diethylstilbestrol. *J A M A* **119**: 400-402 (May 10) 1942.

⁶ Geschickter C F and Byrnes E W. Menopausal Syndrome. *J Clin Endocrinol* **2**: 19-25 (Jan.) 1942.

⁷ Elden C A. Monomethyl Ether of Stilbestrol and Menopausal Syndrome. *J Clin Endocrinol* **2**: 28-29 (May) 1942.

⁸ Abarbanel A R. Clinical Evaluation of Adjunctive Therapy with Stilbestrol Monomethyl Ether with Comments on Toxicity. *J Clin Endocrinol* **2**: 386-390 (June) 1942.

⁹ Bieren R E and Compton B C. The Estrogenic Properties of Dihydrostilbestrol (Hexestrol). *Am J Obst & Gynec* **44**: 28-29 (Aug.) 1944.

¹⁰ Robson J M and Schonberg A. Estrous Reaction Including Mating Produced by Triphenyl Ethylene. *Nature* London **140**: 186 (July 31) 1947.

¹¹ Robson J M and Schonberg A. A New Synthetic Estrogen with Prolonged Action when Given Orally. *Nature* London **160**: 2-23 (July 4) 1942.

¹² Macpherson A E S and Robertson F M. Clinical Use of Triphenylchorethylene. *Lancet* **2**: 1362 (Dec. 30) 1939.

¹³ Blanchard E W. Responses of Laboratory Animals to a New Synthetic Estrogen. *Endocrinology* **30**: S1026 (June) 1942. Blanchard E W, Stuart A H and Tallman B C. Studies on a New Series of Synthetic Estrogenic Substances. *ibid.* **32**: 30-310 (April) 1943.

¹⁴ Castrodale Dante, Bierbaum Olga, Helwig E B and MacBryde C M. Comparative Studies of the Effects of Estradiol and Stilbestrol on the Blood, Liver and Bone Marrow. *Endocrinology* **20**: 312-323 (Sept.) 1941.

¹⁵ Stebbins R B and Blanchard E W. Changes in the Peritoneal Blood and Bone Marrow of Rats Treated with a New Synthetic Estrogen. *Endocrinology* **30**: S1041 (June) 1942.

¹⁶ Freed S C, Eisin W M and Greenhill J P. Assay in the Human Female of Synthetic Estrogen. *ibid.* **32**: 311-314 (April) 1942. Greenhill J P. The Use of Synthetic Estrogen. *Am J Obst & Gynec* **44**: 47-48 (Aug.) 1944.

¹⁷ The octofollin was synthesized by the Research Laboratories of Schering & Company, Kenilworth, N. J.

istration of octofollin Vaginal smears were taken before medication was given and at frequent intervals during the course of therapy

In the early part of the studies each patient was given 0.5, 1.0 or 2.0 mg daily of the estrogenic substance by mouth for six to eight weeks, however, these doses gave little therapeutic effect Therefore the doses were gradually increased to 5 mg or more daily A few

TABLE 1—Subjective Responses of Twenty-Six Women Receiving Continuous Treatment with Octofollin

Response	Dose in Milligrams			
	1 Mg	2 Mg	4 Mg	5 Mg
None	14	16	2	
Slight	4	4	7	5
Fair		2		6
Good			3	8
Excellent				4
Total	18	22	12	23

of the patients with severe symptoms required from 10 to 15 mg daily to obtain relief Continuous therapy was employed in 26 cases Of the 26 patients receiving continuous medication, 5 received the estrogen from one to three months, eight between three and six months, five from six to nine months, and 8 for nine months or longer

Eighteen patients were given interrupted treatment The patients at first received 1 mg daily for fourteen days, then the octofollin was omitted for two weeks The next month the dose was increased to 2 mg daily for the two week period The patients obtained slight or no relief from these doses The following month the dose was increased to 5 mg, then to 10 and 15 mg in the succeeding months Of the 18 patients given interrupted medication, 7 received this type of treatment for five months and 11 for seven months or more

For comparison with the studies on diethylstilbestrol reported in 1941, hepatic function tests were done on 9 patients receiving large doses of octofollin The two tests employed were bromsulphalein excretion and hippuric acid synthesis

In 26 cases complete counts of the formed elements of the peripheral blood (excluding platelets) were performed prior to and during the administration of octofollin Repeated urine examinations were done in all cases

RESULTS

1 *Subjective Effects*—Good relief of symptoms of vasomotor instability was observed in 23 of the total of 44 patients receiving either continuous or interrupted treatment Fair relief was obtained in 10 patients, poor in 4 and no improvement in 1 Hot flushes were eliminated or diminished greatly in 15, and headaches were relieved in 11 patients in whom they had been prominent complaints Of 26 patients, nervousness was diminished in 16 and fatigability in 14

In table 1 are presented the subjective effects of four different levels of dosage of octofollin on the 26 patients given continuous treatment The table shows that the majority of the patients received little or no benefit with doses of 1 to 4 mg daily Only 2 of 22 patients were fairly satisfactorily relieved of symptoms with 2 mg daily Among 12 patients receiving 4 mg daily, symptoms were greatly diminished in 3, while in 7 only slight relief occurred, and in 2 there appeared to be no change

With 5 mg daily, 5 patients obtained slight relief, 6 fair, 8 good and 4 excellent alleviation of symptoms When 1 patient was given 6 mg and another 10 mg daily, each one obtained complete relief of symptoms of the menopause

The subjective effects of interrupted therapy on 18 patients are presented in table 2 There was little or no effect from either 1 or 2 mg daily, given two weeks out of four With 5 mg daily, 6 patients obtained good relief of symptoms, 4 fair and 8 poor, while with 10 mg for the two week period there was excellent relief of symptoms in 4 patients, good in 7 and fair in 7 When the daily dose was increased to 15 mg, the same 4 patients obtained excellent results, 7 good and 7 fair

From these results it would seem that from 5 to 10 mg of octofollin daily is required in the majority of cases to relieve satisfactorily the symptoms of vasomotor instability occurring in the menopause This conclusion is at variance with the observations of Freed, Eisin and Greenhill,¹⁸ who found that the satisfactory daily dose of octofollin was from 1.0 to 2.5 mg Taylor and Thompson,¹⁹ however, had to give from 30 to 50 mg by mouth daily to produce the same estrogenic effect as 1 mg daily of diethylstilbestrol Nausea, vomiting, heartburn and leg cramps were much less frequently observed than with diethylstilbestrol but were noted in some instances in their series of patients receiving octofollin

We observed few untoward reactions Three women receiving 10 mg doses of octofollin over a long period complained of mild discomfort in the lower part of the abdomen Five patients given 10 to 15 mg daily observed an increase in the white seromucoid vaginal discharge This occurs much more frequently with diethylstilbestrol

Nausea did not occur in any of the 44 women we treated, even with doses as large as 10 to 20 mg every twenty-four hours Greenhill,¹⁸ however, reported nausea recently in 2 of 18 patients receiving 5 mg daily of octofollin When the dose was reduced to 2 mg daily he found that the incidence of nausea of 39 patients decreased to 2.6 per cent

A number of our patients had received diethylstilbestrol two to three months prior to octofollin treat-

TABLE 2—Subjective Responses of Eighteen Women Receiving Interrupted Treatment with Octofollin

Response	Dose in Milligrams				
	1 Mg	2 Mg	5 Mg	10 Mg	15 Mg
None	10	8			
Slight	8	10	8		
Fair			4	7	7
Good			6	7	7
Excellent				4	4

ment, and many of the patients felt that diethylstilbestrol had produced greater improvement in strength and energy than did the new synthetic estrogen

2 *Objective Effects*—We employed the vaginal smear as a simple objective means to measure estrogenic activity, although we believe that the subjective results are clinically more important than the exact degree of estrogenic response determined by any objective test Among 18 women obtaining some relief of symptoms

18 Taylor, S. G. III, and Thompson, W. O. Experiences with a New Synthetic Estrogen for Oral Administration, *Endocrinology* 30: S1042 (June) 1942

on continuous therapy with 5 mg daily of octofollin for six to eight weeks there was an increase in the estrous activity of the vaginal smear in 3 from an inactive type or a 1 plus to a 2 plus or more, while the cellular changes in the vaginal smears of 6 patients showed a rise of only 1 plus and in 9 there was no change. Sixteen women of the total group of 26 patients on continuous therapy showed no discernible change in their vaginal smears, however, 4 of these patients had 3 plus smears at the beginning of the experiment. Thus the administration of the estrogenic substance did not produce any significant change in the vaginal smears in approximately 50 per cent of the 26 women treated with this method, and in no instance was a complete (or 4 plus) vaginal smear response produced.

Of the 18 patients given interrupted treatment, 12 had negative (inactive) vaginal smears, 4 showed 1 plus and 2 showed 2 plus smears before octofollin was given. After five to seven months of therapy beginning with 10, then 20, 50, 10 and eventually reaching 15 mg daily doses for a two week period each month, 8 women had 1 plus vaginal smears, 7 had 2 plus and 3 had 3 plus

Since in a number of the women experiencing satisfactory alleviation of their menopausal symptoms there was little if any change in the cells in the vaginal smear after prolonged therapy, it was impossible to correlate symptomatic relief with objective results

Several patients given 10 to 15 mg of octofollin daily noted some tenderness of the breasts and an increase in pigmentation of the areolae. We have observed similar changes more frequently in patients receiving 10 mg daily of diethylstilbestrol.

Uterine bleeding was produced in 3 of the 18 women given interrupted treatment. It usually occurred seven to ten days after the discontinuance of daily doses of 5 to 15 mg of octofollin. It did not appear when smaller doses were employed.

STUDIES OF TOXICITY

1 *Hepatic Function Studies*—Hepatic function was studied both by hippuric acid synthesis and by the bromsulphalein excretion of 8 women given an average of 4 to 5 mg daily of octofollin for five months. The tests were performed in all of the cases before any treatment was given and repeated after a period of five months of therapy. In 7 cases the results of the hippuric acid synthesis tests were within normal limits both before and after treatment. The values for this test in 1 case were below the level of normal both before and after therapy. The results of the bromsulphalein excretion tests on each of the 8 patients were within normal limits both before and after treatment. There was therefore no significant change in hepatic function attributable to the administration of octofollin. We¹⁰ have previously shown that neither diethylstilbestrol nor estradiol in the doses used in the treatment of the menopause produce any demonstrable change in the function of the liver in human beings.

2 *Blood Studies*—During octofollin therapy no abnormality in the number of erythrocytes or leukocytes among 26 patients studied was observed while the total grams of hemoglobin and the differential counts of the leukocytes remained within the range of

normal values. The only bleeding tendency that occurred was the uterine bleeding produced in 3 women by the withdrawal of the estrogenic substance.

3 *Urine Studies* — Repeated examinations of the urine of 38 patients showed no changes that could be attributed to the medication

ANIMAL EXPERIMENT

For comparison with the studies made by one of us²⁰ on the changes in the bone marrow of dogs following the administration of estradiol or diethylstilbestrol, an experiment was done to determine the effect on the bone marrow of dogs of intramuscular injections of octofollin.

Studies were performed on 2 mature healthy male dogs, weighing 11.5 and 14.5 Kg. As in the previous experiments, the animals were kept for a conditioning period of three weeks prior to injection of the octofollin. Red and white cell and platelet counts were done on the peripheral blood two to three times a week during the control and experimental periods.

Each dog was given a daily intramuscular injection of 5 mg of octofollin in oil for fifty days. There occurred a slight rise in the number of leukocytes in the peripheral blood of each animal at about the eighth to the twenty-fifth day of treatment. We did not observe the simultaneous decrease in the number of thrombocytes which occurs with much smaller doses of estradiol or of diethylstilbestrol. The amount of octofollin injected was increased to 15 mg daily for fourteen days, and there occurred a fall in the number of thrombocytes in the peripheral blood of the smaller dog. Each animal was then given 20 mg daily for sixteen days. At the end of this period there was a definite reduction in the number of thrombocytes and leukocytes in the circulating blood of the smaller dog. A slight thrombocytopenia was demonstrated in the peripheral blood of the larger animal. An autopsy was done on each dog at the end of eighty days of treatment, and a mild hypoplasia of the bone marrow of the smaller animal was found. There was no significant change from normal in the bone marrow of the other animal.

Each dog received approximately 780 mg of octofollin in sesame oil in eighty days, but pronounced changes were seen in the peripheral blood of only 1 animal. A total of 210 mg of diethylstilbestrol dipropionate in olive oil injected during twenty-one days, or an estrogenically equivalent dose of alpha estradiol in sesame oil injected during thirteen days has been shown to produce leukocytosis, thrombocytopenia and death in dogs²⁰. Our observations would indicate that diethylstilbestrol and estradiol are by this test, much more potent than octofollin.

SUMMARY

The majority of 44 women obtained relief of the vasomotor symptoms of hypogonadism when given oestrogens by mouth in doses of 5 to 15 mg daily. Of 26 patients given continuous treatment 15 (58 per cent) obtained good relief of symptoms, 6 (21 per cent) fair, 4 (15 per cent) poor and 1 (4 per cent) no relief. Satisfactory alleviation of symptoms was secured in 11 of the 18 patients given interrupted therapy. The

19 MacBryde Free'man Lee Tel and Co tele^s MacBryde C. re
dile Is Nelson's Freedman.

C. M. Cummings, Secretary of the Board of Directors, 20

required larger daily doses for the two week period each month than the patients on continuous treatment. Among the 18 patients receiving 15 mg daily for two weeks each month 11 (61 per cent) obtained good subjective response while 7 (39 per cent) obtained only a fair effect.

Nausea did not occur in any of the patients studied. Three patients (8 per cent) had discomfort in the pelvis, and several women noted tenderness of the breasts and increased pigmentation of the areolae when given 10 to 15 mg daily. Vaginal bleeding occurred after interruption of treatment in 3 of 18 cases.

The majority of our patients required from 5 to 10 mg daily for adequate relief of symptoms. In the series given interrupted treatment the average daily dose for the two week period was 10 to 15 mg.

Objective studies gave less definite evidence of estrogenic activity. Only 9 of 26 women (35 per cent) receiving 5 to 10 mg daily had any change in the vaginal smears, and not one of these developed a complete estrous response. A slight to moderate change in the cellular type of the vaginal smears of each of the 18 patients on interrupted treatment was observed. Twelve of these patients had inactive vaginal smears before octofollin was given. In our experience 1 mg daily of diethylstilbestrol produces in the average case complete response in the vaginal smear in twenty-one days. Our observations indicate that, per milligram, diethylstilbestrol is at least five to ten times as potent when given orally as octofollin.

The very low incidence of side reactions, particularly of nausea, is of clinical importance. Disadvantages of octofollin are that comparatively large doses are required and that it is more expensive per milligram than diethylstilbestrol. It is, however, less expensive per clinically effective unit than oral preparations of "natural" estrogens.

Liver function tests, blood studies and urine examinations showed no toxic effects of the new synthetic substance. Octofollin in the doses used in this experiment is apparently a safe therapeutic estrogen.

CONCLUSIONS

1 The new synthetic estrogen octofollin is effective in treatment of hypogonadal symptoms in women.

2 It appears to be relatively nontoxic, since nausea did not occur in this series of 44 patients and no other toxic manifestations were observed.

3 The effective oral dose is from 5 to 10 mg daily when continuous treatment is used or from 10 to 15 mg daily for interrupted treatment.

Infantile Paralysis—The normal and usual method of travel of the virus throughout the body is reported to be by the pathways provided by the nerves. This is a neurotrophic or neuronotrophic virus. It leaves no demonstrable histologic change as it travels over or through the nerve fibers yet its spread by way of neurons is dependent on healthy normal fibers and nerve cells. For example it cannot progress in nerve tissue that has not fully regenerated after traumatic changes. The rate of the progression of the virus in peripheral nerves to the central nervous system has been calculated by Howe and Bodian to be at the rate of 24 mm per hour in the experimental animal. Such travel occurred in both the motor and the sensory fibers—Gudakunst, Don W. *New Developments in Infantile Paralysis*. New York State J. Med. 43: 1514 (Aug. 15) 1943.

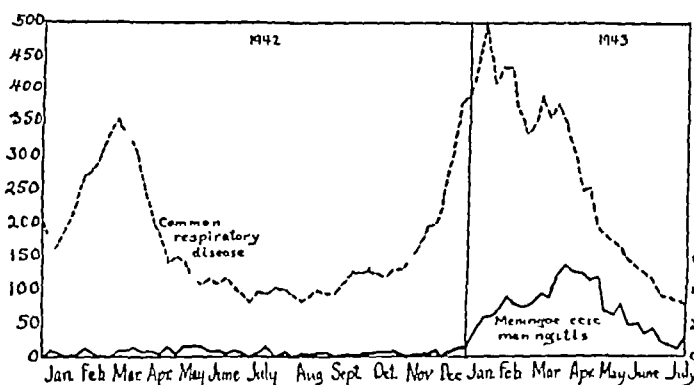
MENINGOCOCCIC MENINGITIS AND SEPTICEMIA

REPORT OF OUTBREAK IN FOURTH SERVICE
COMMAND DURING WINTER AND
SPRING OF 1942-1943

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Cerebrospinal meningitis has occurred wherever large numbers of troops have been brought together. During and after World War I there were in the United States Army a little less than 6,000 cases in the course of thirty-three months.¹ The over all mortality for that series of cases was 39 per cent. Following the war the cases in the civilian population of the United States continued for ten years at a high rate, but by 1930 the incidence of cases had fallen to its usual prewar level.² For the years 1939, 1940 and 1941 slightly less than 2,000 civilian cases per year were reported for the whole country. The year 1942, however, showed an increase with 3,400 cases during the first eleven months.

In the Fourth Service Command sporadic cases of meningitis occurred during the years 1941 and 1942.



Relation of weekly incidence of meningococcal meningitis to that of common diseases of the upper respiratory tract as observed in 1942-1943 in the Fourth Service Command. Each figure at the left or the right represents the number of cases per thousand annually.

The case rate per thousand troops began to increase in December 1942 and what might be termed a clearcut outbreak was well on its way by the first of January. At this time simultaneous outbreaks occurred at an army station in North Carolina, at one in South Carolina and at one in Alabama, and two weeks later a camp a few miles from the first one in Alabama reported an outbreak. A large preponderance of new troops were on duty at these posts during this time.

The chief of the Medical Branch, Headquarters Fourth Service Command, has encouraged and expedited all the work mentioned in this report.

This article in brief form was read at the regional meeting of the American College of Physicians, New Orleans, April 16, 1943. The statistics have been revised to include April, May and June 1943.

Members of some fifty station hospital staffs have contributed observations and studies on cases occurring in their respective camps. A majority of the cases have come from the services of Lieut. Col. W. F. Daniels, J. F. Knighton, O. B. Mayer, Louis O. H. Jr., and A. W. Wallie. Majors M. R. Puchman, I. W. Howell, A. C. McCarthy, and A. J. Sullivan, and Capt. W. B. Moleck. Treatment has been entirely under their control and has followed with minor variations the recommendations contained in Surgeon General's Official Circular Letter No. 17 and memoranda from the Chief of the Medical Branch, Headquarters Fourth Service Command. The article does not completely express the views of the medical staff of an organization but is the result of a study of their work supplemented by personal clinical observations.

1. Simon, James S., and Miller, Henry C. *Cerebrospinal Meningitis*, chapter IV in *The Medical Department of the United States Army in the World War*, U. S. G. P. Office, O. R. 2, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

In three of these four camps no 2 patients came from the same company or barracks, and the outbreak presented the epidemiologic appearance of being merely an increase in sporadic cases. In the fourth camp two companies had 6 and 8 cases respectively in addition to the sporadic cases elsewhere on the post. The pattern of outbreaks of meningitis is clearcut and may be stated as follows. Simultaneously at distant points an increase in sporadic cases occurred, reaching a peak in several months and declining after several more months.

In this outbreak as in previous ones the increase in case rate followed a pronounced increase in infections of the respiratory tract. This is well shown in the accompanying chart. It is to be noted that the rate of meningitis is plotted on a scale one twenty-fifth of that of diseases of the upper respiratory tract.

During World War I definite advances were made in the epidemiology of meningococcal infections. It was found that there is constantly in nonepidemic periods a carrier rate between 1 and 2 per cent. During epidemics, however, this carrier rate rises to the neighborhood of 30 per cent or higher, depending on local circumstances. Since the last war these facts have been corroborated frequently, and it has further been learned that if a high carrier rate is to be significant the organism involved must be group I meningococcus³ since during epidemics 90 per cent or more of all cases are caused by this organism.⁴

The facts described, namely increase in sporadic cases and localized epidemics following a wave of infections of the upper respiratory tract, associated with a great increase in the meningococcus carrier rate among large groups of troops, provide evidence for a concept of the epidemiologic nature of meningococcal outbreaks. Among the new troops brought into an army post there is a rate of at least 1 to 2 per cent meningococcus carriers. If their arrival at camp occurs during the months when diseases of the upper respiratory tract are prevalent an extremely high rate of such diseases soon develops among the new troops and includes the carriers. The coughing and sneezing distribute not only the virus responsible for the diseases of the upper respiratory tract but also the meningococci introduced by the carriers. In this way the carrier rate builds up rapidly.⁵ In susceptible persons during periods of fatigue and exposure the carrier state may progress into one of the clinical forms of meningococcal infection.

These facts have been carefully considered by various physicians interested in lowering the case rate of meningitis and recommendations have been made⁶ which if possible to be carried out would undoubtedly greatly lower the case incidence. For instance Glover⁷ in 1918 showed that avoidance of crowding by adequate spacing of cots reduced the carrier rate from 29 to 4 per cent. Others have recommended in addition avoiding exposure, fatigue and too rapid inoculation for typhoid and other diseases. However all of these rules must be broken when it becomes necessary to build a huge army with the utmost speed. Under these conditions it is impossible to avoid all or even one of these conditions. It is fortunate therefore that modern methods of treatment of the patients and more

recently prophylactic treatment have reached such a degree of excellence that the problem is in a fair way toward being solved by chemotherapy.

STATISTICAL REVIEW

The present study comprises the cases of meningococcal infection which occurred in troops of the United States Army throughout the seven Southeastern states during the months of December 1942 and January, February, March, April, May and June 1943, the total

TABLE 1—Cases of Meningococcal Infection by Four Week Periods with Death Rate

	Meningitis	Septicemia	Total	Mortality
December	72	14	86	12.8%
January	151	80	231	7.3%
February	216	76	292	1.7%
March	351	118	469	2.3%
April	294	155	449	2.7%
May	187	69	256	2.3%
	1271	512	1783	3.5%

TABLE 2—Cases of Meningococcal Infection by Weeks with Deaths and Death Rate

Week Ending	Cases	Deaths	Mortality
December 4	4	1	
11	13	0	
18	14	2	
25	15	0	
January 1	40	8	12.8%
	86	11	
January 8	40	8	
15	51	4	
22	62	3	
29	78	2	7.3%
	331	17	
February 5	57	2	
12	71	0	
19	70	2	
26	85	1	1.7%
	283	5	
March 5	74	2	
12	132	2	
19	142	2	
26	171	0	
	469	11	2.3%
April 2	133	1	
9	124	3	
16	120	6	
23	15	2	2.7%
	432	12	
April 30	71	2	
May 7	51	0	
14	50	2	
21	54	2	2.7%
	246	6	
May 28	39	0	
June 4	46	1	
11	40	0	
18	22	1	1.5%
	133	2	
June 25	16	0	
	16	0	
Total	1783	64	3.5%

number of cases for this period being 1935. Table 1 shows the cases by months and it will be seen that the incidence of cases has decreased (table 2).

Table 3 shows the distribution of deaths from meningitis and septicemia in new and in seasoned troops. An arbitrary period of three months service was taken to define new from seasoned troops. It will be seen that slightly more than two thirds of the total cases developed among new troops (table 4). It must be remembered however that the final significance of this fact can be determined only when the number of new and old troops can be compared and for many reasons this information is not available. One of the

¹ Brinkman, S. I. The Meningococcus (Neisseria Intracellulare). Bact. Rev. 4: 59, 1940.

² Kuhn, D. M. Fourth Service Command Laboratory report per cent communicability to the author.

³ Zin, C. H. and L. J. Lane. J. Clin. Microbiol. 1: 203, 1941.

⁴ Butler, A. F. The Control of Infection. In: A. C. S. Ellis, ed. Medical Text. Ann. Int. Med. 15: 177 (Aug.) 1941.

⁵ Glover, J. A. The Carrier State of Meningococcus in the Army. J. Clin. Med. 17: 150 (July) 1918.

cases showing a clearcut increase in cells in the spinal fluid would be classified as cases of meningitis but the fatal cases have been divided according to the principal cause of death. If the count in the spinal fluid had not reached more than 400 cells before death the patient was classified as dying of meningococcic septicemia, although it is realized that this may be a distinction without a difference. Nearly half the deaths (23 of 51 cases coming to necropsy) occurred in cases in which meningitis had not developed to a point where the cellular response in the spinal fluid was impressive. That response is interpreted as an index of severity of infection, and this is borne out by the finding of hemorrhages in the adrenals in 16 of these cases.

At several posts Major John J. Poutas obtained information on the proportion of cases coming from urban or rural districts and found that there was no difference. This suggests that during nonepidemic periods urban dwellers are no more exposed to group I meningococcus than rural dwellers.

Mortality—At first glance (table 1) there seems to be some discrepancy between the general mortality and the higher mortality during the months of December

TABLE 3—*Distribution of Deaths from Meningitis and from Septicemia Among New and Seasoned Troops (Dec 1, 1942 to March 26, 1943)*

	Total	New	Seasoned
Meningitis	38	23	15
Septicemia	26	21	5
Total	64	44	20

TABLE 4—*Mortality from Meningococcic Infection in New and in Seasoned Troops (Dec 1, 1942 to March 26, 1943)*

	Cases	Deaths	Mortality
New	1,210	42	3.41%
Seasoned	567	20	3.53%

and January. If this is broken down into individual weeks (table 2) it will be seen that the mortality for the 40 cases during the week ended January 1 was 20 per cent. This unusual occurrence gave rise to immediate activity in the Fourth Service Command Headquarters and notices were sent out to all surgeons of the Fourth Service Command warning them about the presence of meningitis and meningococcic septicemia and advising prompt therapeutic measures. In retrospect it seems that the high mortality for that one week was caused by a combination of circumstances, since the virulence of the disease and the number of new troops have remained essentially the same. The deaths occurred largely at new posts where the medical personnel was new to military medicine. In addition to this sodium sulfadiazine for intravenous use was not available at most of the hospitals at that time. Some of the patients were admitted in the evening and were seen only by the officer of the day, who in many instances was a member of one of the surgical branches of the staff and therefore not thoroughly familiar with cases of meningococcic septicemia. Finally and perhaps most important, few of the reserve officers on duty in the medical corps had had previous experience with cases of meningitis, and most of them had never seen a case of meningococcic septicemia.

Active interest was aroused in the entire subject of meningococcic infections. Local scientific meetings

were held, and discussions in regard to therapeutic measures were engaged in. Improved cultural technique for isolating the meningococcus was prepared and distributed to laboratory officers at station hospitals by the Fourth Service Command Laboratory. This interest spread also throughout the unit medical officers with troops so that within ten days all medical officers of the command were on the lookout for cases, and directions prepared for the treatment of patients brought into hospitals during the night were posted by the chiefs of the medical services of the various station hospitals. At station hospitals where cases were numerous a member of the contagious disease section of the medical service was placed on night duty so that all details of diagnosis and treatment were carried out promptly and accurately. In addition to this the nurses on night duty throughout the hospital were alerted to the possibility of patients developing signs of coma or exhibiting cutaneous rashes. Whether the additional therapeutic measures which were used and are described later as adjuncts in the section on treatment added anything to the reduction in mortality is not perfectly clear, but this remains as a distinct possibility. It seems probable that all members of the medical corps on duty in the zone of interior during the past few months will continue to be on the watch for cases of meningococcic infection and will be familiar with proper treatment so that it is safe to prophesy that the mortality rate for the remainder of this war will be held to a low level.

The mortality figures for this series include a number of patients who died in the hospital before their condition was recognized and who received no specific therapy. In addition one patient is included who died before he was admitted to a hospital. These facts suggest that a perfect system of early diagnosis leading to prompt treatment would reduce the mortality still further. That this has already been attained to a high degree may be seen from the statement that at one post while 108 patients were being treated with a mortality of under 3 per cent there were in the county 8 civilians with the disease, 4 of whom died—a mortality of 50 per cent.

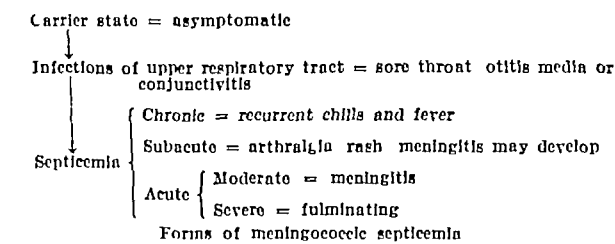
The report of meningitis throughout the state of Maine for the year 1942 gives a mortality of "something over 14 per cent, which is very low."² There are eight rather large posts in the Fourth Service Command where an aggregate of 161 patients with meningococcic infection were treated without a death. There were 49 other patients scattered throughout twenty-one small posts without a death. These facts are brought out to show merely that even in a single command mortality rates differ from post to post, depending on the number of cases of fulminating infection that are encountered. Eight patients with meningitis received no specific treatment and in 8 others treatment was started so late as to be almost hopeless. With regard to the 17 remaining patients retrospective improvements in therapeutic technique are possible. These improvements fall into all the various aspects of modern therapeutic procedures such as proper administration of sulfonamide compounds, control of fluid balance, control of electrolyte balance, control of intracranial pressure, avoidance of distention of the bladder, sedation and nourishment. Fulminating infection may require certain adjunctive measures as well. In most large hospitals one or two medical officers have become expert in these procedures and have been given complete responsibility for the entire treatment of all

patients with meningococcic infection. This specialization has produced noticeable improvement in methods and results. Any comparison of army mortality with civilian mortality requires consideration of various factors, but the excellence of army practice remains a matter for justifiable satisfaction.

CLINICAL VARIETIES OF MENINGOCOCCIC INFECTION

During the course of the years 1941 and 1942 sporadic cases of meningococcic infection were encountered in the army throughout the entire country. The infection consistently conformed to the usual pattern of cerebrospinal meningitis with a history of chilliness, frequently of chills, sore throat, headache and occasionally a gastrointestinal upset. Examination of the patients revealed fever, leukocytosis, drowsiness, stiff neck and often petechial lesions of the skin, and the spinal fluid contained between 1,000 and 20,000 cells, predominantly polymorphonuclears. Blood cultures were positive in some cases, and the spinal fluid usually contained visible intracellular or extracellular gram-negative organisms, although occasionally these were demonstrable only by culture. Spinal puncture was performed once for diagnostic purposes and occasionally

A Schematic Diagram of Meningococcic Infections



a second time to prove cure or to differentiate drug fever from persistence of meningitis. In a few cases relief of excessive intracranial pressure by spinal tap quieted extreme restlessness for some hours, and in 1 case it was performed with benefit four times in the course of twenty-four hours. In another case extreme Biot breathing was relieved by several taps during the early hours of the disease and one or more patients might in retrospect have been saved by this procedure. Otherwise no useful purpose was gained by repeated spinal taps. In 2 cases death seems certainly to have been precipitated by the production of a pressure cone causing sudden unexpected death.

During December a few cases of meningococcic septicemia made their appearance and the number rapidly increased during January, so that during the last two weeks in January there was a total of 61 cases. It seems fairly certain now that every clinical meningococcic infection with the possible exception of a variety of infection of the upper respiratory tract consists at some stage of an invasion of the blood stream by the causative organism. In most instances the organism localizes in the meninges producing clinical meningitis, but in certain cases this does not eventuate. Meningococcic septicemia can be divided into acute, subacute and chronic forms as shown in the accompanying outline.

Acute Form.—Acute meningococcic septicemia early in its course presents a picture similar to grip or streptococcal sore throat with headache, chilliness or chills,

backache and muscle ache. Soon this picture is apt to change, however, and restlessness and drowsiness supervene, often progressing rapidly to coma. Frequently the patients are brought into the hospital in a comatose state. The most fulminating type of infection ends fatally in the course of a few hours. One patient at a Southern camp was drilling at 10 a m when he reported feeling bad and at 1 p m he died. This same fulminating type of disease has been observed throughout the command in about 12 instances. In 6 of these cases organisms were seen in the peripheral blood smear.

Many of the patients with fulminating infection were admitted to the hospital in a state of shock with blood pressure between 50 and 80 mm of mercury. Frequently such patients had evidence of widespread hemorrhages throughout the skin and mucous membranes. Usually the spinal fluid of patients with this type showed few if any cells. Many of the patients were thought to have had hemorrhages into the adrenal glands (Waterhouse-Friderichsen syndrome). Among patients with fatal infection there were 26 who died during the period of acute septicemia before meningitis developed. Autopsy was performed on 23 who died of septicemia and hemorrhages into the adrenals were present in 17. In an additional patient edema and congestion of the adrenal glands were noted.⁸ Great efforts have been made to evolve a form of treatment which would enable such patients to be cured, and this regimen includes the various adjunct measures described in the paragraph dealing with treatment. Bacteriologic correlation has not been worked out but all three groups of meningococci are represented in this small series of 14 fatal cases. It will be recalled that in children organisms other than meningococci are held to be responsible for fulminating septicemia associated with hemorrhage into the adrenal glands. The only organism other than the meningococcus which has been encountered in such cases in this group is *Neisseria catarrhalis*, which in 1 fatal case was the only organism recovered. Its exact significance is unknown but it was thought probable that the meningococcus had been present but was not demonstrated in the cultures.

Patients with slightly less severe septicemia lapse into coma from which they are aroused only by rapid and heroic treatment. They may show petechial or ecchymotic cutaneous lesions which in some develop into huge purpuric areas. These lesions of the skin are apt to develop rapidly, and on many occasions medical officers have noted that new lesions developed under their observation while they were performing spinal tap. An entirely different cutaneous eruption has been observed in many cases of both chronic and acute septicemia. This has been described in the British literature and in the *Lancet* in 1941. Majors Dickson and McKinnon and Captains Wagner and McGillivray⁹ gave an excellent account of it as it occurred in a Canadian army general hospital. The lesions appear in groups of a few or dozens and most commonly on the limbs or trunk. They are round well defined maculopapular often tender 5 to 35 mm in diameter usually with dark red or purple centers. The pink area fades on pressure but the dark central spot does not. These lesions are apt to become more hemorrhagic in the

⁸ In 1 fatal case of meningitis the organism was not recovered.

⁹ Dickson, J. C., McKinnon, J. E., Wagner, D., and McGillivray, J. *Meningococcal Infection*. *Lancet* 2 (1941) 635-636.

course of a day or two, and as the patient improves they fade in two to four days, leaving small pigmented areas. Excellent descriptions of this form of eruption have been made by several medical officers in the Fourth Service Command.¹⁰ At posts where many such cases have been seen this rash is recognized as characteristic enough to establish the diagnosis of meningococcic septicemia. The Canadian authors emphasized the fact that localized pain or tenderness of muscles is a symptom which differentiates meningococcic septicemia from other forms of acute infection. In many of our army posts it has been noticed that acutely inflamed joints or merely exquisitely painful joints have been complained of in many instances.

Differing from the acute severe and the acute fulminating infections are others which can be called acute mild meningococcic septicemia. The onset is like that already described, but the patients do not seem to be particularly ill, they respond immediately to treatment with sulfonamide compounds and are well in a day or two. In fact 3 patients, each having a blood culture positive for meningococci of group I, recovered spontaneously without drug or serum therapy before the culture was known to be positive. Many similar patients with characteristic cutaneous eruptions but with negative blood cultures are believed to have a meningococcic infection falling in this mild group but have not been included in the statistical study.

Chronic Forms—Chronic meningococcic septicemia presents a picture which frequently may be mistaken for malaria, either tertian or quartan, or some form of relapsing fever. The patient suffers from episodes of chilliness, fatigue, headache, general malaise, fever, leukocytosis and usually one or the other of the cutaneous lesions described in the foregoing paragraphs. The disease may continue on its relapsing course for several months unless the patient is treated, although spontaneous recovery occasionally occurs. The diagnosis is frequently aided by a special technic blood culture which is most apt to yield organisms if taken while the patient is having a chill.

Subacute Forms—Subacute meningococcic septicemia simulates rheumatoid arthritis or acute rheumatic fever and is frequently associated with fluid in the knee joints. The patients occasionally improve under nonspecific symptomatic treatment but more often they develop in a week or two signs and symptoms of meningitis at which time the diagnosis becomes apparent. Routine cultures from the joint fluid sometimes provide the diagnosis and in a few cases culture of the joint fluid has been positive after several days of chemotherapy. In other instances the characteristic cutaneous eruption gives rise to the correct diagnosis.

In epidemiologic circles the carrier state is considered as a subclinical asymptomatic form of meningococcic infection. In addition to this it is thought by many that nasopharyngitis can be produced by meningococci and a number of cases of conjunctivitis (7 cases have been confirmed bacteriologically at one station hospital) and otitis media have been shown to be caused by this organism.

COMPLICATIONS

In patients receiving early chemotherapy complications are extremely rare. Statistics are not yet available but a personal survey of this service command

has left me with a recollection of a few patients with deafness (3 such patients have been discharged from the army on account of residual deafness), a few with diplopia who recovered, and a few with stiff joints, who recovered completely or partially. One patient was left with a persistent paralysis of the right serratus maximus muscle. Hematuria is seen frequently before any therapy is started but no nephritis has been seen during convalescence. Retention of urine with distention of the bladder is frequently seen in comatose patients, and in these catheterization may reduce restlessness. Accompanying encephalitis has produced coma early and a few of the patients with the fulminating form of septicemia have been brought to the hospital following the initial symptom of convulsions. Several others have died before the true nature of the condition was discovered. Bronchopneumonia occurred occasionally and was seen at necropsy. In most of the patients who recovered from meningitis cure was complete although a few soldiers continued to complain of recurrent headache for some weeks or months and psychoneurosis has been noticed in some.

Four patients have had large sloughs involving the skin and subcutaneous area in the location of confluent purpuric areas. Two of these required skin grafting.

On the whole complications have been conspicuous by their rarity.

POSTMORTEM OBSERVATIONS

Final reports of the postmortem examinations have not been received. Several facts stand out from the gross examinations. Usually in septicemia there were widespread petechial hemorrhages in the meninges and many other organs and often also gross hemorrhages into the adrenal glands. Hemorrhage was associated with, or secondary to, localized thrombosis of the vessels in some cases. In many of the thoroughly treated patients with meningitis clearcut evidence of the exact cause of death was lacking. One finds such statements as "In summary, the remarkable thing about this autopsy was the absence of positive findings." In cases in which there was a high cell count in the spinal fluid during life—sometimes as high as 19,000 polymorphonuclears—as well as visible and recoverable meningococci, little evidence of meningitis was apparent in the gross specimens at postmortem examination. The meningitis might be said to have been practically cured, but irreversible effects of sepsis seem to have caused death. In every fatal case several possible causes of death presented themselves. Some patients seem to have died of respiratory failure either from toxic effect on the respiratory center or from increased intracranial pressure with Biot breathing. Patients who die of septicemia die in shock, and most of them also develop acute pulmonary edema. This pulmonary edema occurs in untreated as well as treated patients and may be part of the picture of shock or it may be produced by the acute myocarditis seen in some cases. Liberal quantities of fluids injected intravenously and large doses of sulfonamide compounds, which are capable of producing myocardial and renal lesions may be considered also as contributing causes, but I have seen no worth while evidence that can incriminate these therapeutic agents. Of 64 fatal cases 51 were examined post mortem. In 2 cases crystals were present in the renal substance although anuria had not developed. In a number of cases tubular lesions were present and many had been produced by sulfadiazine. It is also to be remembered that nephritis is a complication of

¹⁰ In the older American writings these lesions are spoken of as resembling rose spots or erythema nodosum.¹¹

¹¹ Herrick, W. W. Text Book of Medicine by American Authors, edited by R. I. Cecil. Philadelphia: W. B. Saunders Company, 1942.

Meningococcic disease Further light on this subject is hoped for from careful clinical and pathologic study of fatal cases. Correlation of the types of organisms with the different varieties of fatal cases is being undertaken. From present information 13 fatal cases of meningitis yielded group I *Neisseria intracellularis*, 2 group II and 1 *N. catarrhalis*, while from 12 cases of septicemia there were 7 with group I, 2 with group II, 2 with group II A, and 1 with *N. catarrhalis* (table 5).

BACTERIOLOGY

Studies of organisms encountered in the outbreak have yielded the usual percentage for each of the various groups. The organism most often recovered is group I meningococcus. Group II meningococcus has been found in only 2 or 3 cases. Group II A was found in about one tenth of the cases. These findings are similar to those reported in other outbreaks.

In more than half of the instances in which the diagnosis of meningococcic meningitis was made there was bacteriologic confirmation in the laboratories of the various station hospitals. A large number of the patients with positive spinal fluid cultures also had positive blood cultures. The numbers of positive cultures reported are directly related to the grades of efficiency of the individual laboratory units, and in view of the wide distribution of the reported material the average level of laboratory diagnoses appears high. During an epi-

TABLE 5—Thirty-Three Fatal Cases Divided According to Type of Organism

Meningococcus Group	I	II	II A	<i>N. Catarrhalis</i>
Meningitis	10	1	2	0
Septicemia	8	1	4	1

demic there may be more clinical diagnoses unconfirmed by bacteriologic studies than would be permissible in a period of sporadic meningitis. Several specimens of spinal fluid containing only from one to five cells have yielded meningococci on culture. In the case of one of these the fluid was tapped six hours later and then contained 4,000 pus cells.

TREATMENT

The amazing reduction in mortality from 39 per cent in the last war¹ to less than 3.5 per cent in the present war is due entirely to chemotherapy.¹⁻³ It is true that the most desperately ill patients may require additional therapeutic measures but for over 95 per cent of all patients chemotherapy properly administered is the only specific form of treatment necessary.

Of the various sulfonamide compounds sulfadiazine has up to the present proved to be the most satisfactory in the treatment of meningococcic infections. It is more efficacious than sulfanilamide and with one important exception it is much less toxic than sulfapyridine and sulfathiazole. The sodium salt is available for intravenous treatment and can be administered in 5 per cent concentration in distilled water or in 1,000 cc of isotonic solution of sodium chloride. If all patients could be given a diagnosis and treated at the onset of the first symptom it is my firm belief that the mortality would be reduced to zero. However the disease is often masked by the absence of pathognomonic symptoms and by the simultaneous occurrence of many infections

of the upper respiratory tract presenting similar symptoms. This leads inevitably to loss of time in treatment in a few cases. In other cases the infection is so virulent that the patient dies before treatment can be given or before treatment has an opportunity to stem the tide of infection.

Treatment of carriers with sulfonamide compounds has been reported from England,¹³ Australia and various small groups in the United States.¹⁴ Fairbrother¹³ found only one carrier in a group of 139 patients in a British military hospital who were undergoing treatment for another disease with sulfapyridine (total dose about 22 Gm.) while a control group contained 22 per cent carriers. He then treated 13 known carriers with 10 Gm in three days and eliminated meningococci from the nasopharynx in all 13. Mueller,¹⁴ during the course of a rather sharp outbreak of type I infections in New England, treated 200 persons, of whom between 60 and 70 per cent were carriers, and was unable to recover the organisms from a single one three days after cessation of the drug therapy. The dosage was 3 Gm., 2 Gm and 2 Gm in three days. Similar results have been obtained with even smaller doses. Prophylactic treatment has been used successfully in the United States Army in the course of the past few months. Thus one may see that small doses of sulfadiazine are capable of killing the organisms in persons designated as carriers. Patients with acute mild meningococcic septicemia can be cured by 8 to 10 Gm in divided doses, and some have been observed to recover spontaneously. Chronic septicemia clears up on doses of 3 or 4 Gm a day given for from five to seven days and subacute septicemia responds to about the same dosage. Full blown meningitis responds more consistently than does acute severe septicemia. In most cases meningitis is controlled by an initial oral dose of 4 Gm of sulfadiazine followed every four hours with 1 or 1.5 Gm by mouth. In cases in which the infection has progressed further, with more organisms and the development of pus, somewhat larger doses may be required and more prolonged treatment may be necessary. The more severe form of meningitis may require an initial intravenous dose of sodium sulfadiazine 5 to 8 Gm depending on the patient's weight to be followed by further intravenous therapy if the drug does not persist at an adequate level in the blood. Finally the patients with fulminating septicemia, those who if untreated frequently die within two to four hours after first reporting off duty, need immediate adequate intravenous treatment supplemented by active treatment for the dehydration and shock in which they are seen. Here again 5 to 8 Gm of sulfadiazine is given as soon as the clinical diagnosis is reached. From these remarks it is clear that the varying degrees of severity of meningococcic infection require different forms of treatment (table 5). If the infection is of the milder type the blood may be cultured and the spinal fluid examined before treatment is begun but if the infection is overwhelming not a single minute should be lost in starting treatment. In large station hospitals where most of the patients with fulminant infection have been treated slight variations in the routine have been elaborated. There is uniform agreement as to the need for immediate intravenous treatment and equally uniform agreement as to the need for restoring body fluids as rapidly as possible. Lieut. Col. Worth B. Daniels finds that

¹² Schweinler, F. I., Gelman, Sidney, and Long, I. H. The Treatment of Meningococcic Meningitis with Sulfanilamide. *J. A. M. A.* 108: 111 (April 24) 1937.

¹³ Fairbrother, I. V. Control of Meningococci by Sulfonamide Derivatives in Great Britain. *Brit. M. J.* 2: 512 (1936).

¹⁴ Mueller, J. H. The Effect of Sulfonamide Compounds on the Carriage of Meningococci. *Am. J. Hyg.* 34: 101 (1937).

giving the sodium sulfadiazine in 1,000 cc of isotonic solution of sodium chloride starts both chemotherapy and restoration of fluids at the same time. At the station hospital where he is chief of the medical service best results were thought to be obtained by a somewhat smaller initial intravenous dose (3 Gm or 3.5 Gm). In most cases this is followed by 1,000 cc of 5 per cent dextrose solution, and fluid is given thereafter in amounts adequate to insure abundant urinary output.

Complications—The one disturbing complication encountered in treatment with sulfadiazine is hematuria, which is often associated with retention of nitrogen and only rarely with oliguria and anuria. It is caused by crystallization of the superconcentrated form of the drug in the tubules of the kidneys. It has been known for some time that this crystallization will not take place in alkaline solutions and that crystallization depends on a combination of concentration and acidity of the solution. That this holds true for human urine was shown graphically by Fox, Jensen and Mudge.¹⁵ Two patients treated at the Presbyterian Hospital, New York, were given enough of the drug intravenously to produce blood levels of 69.5 mg and 138 mg per hundred cubic centimeters respectively. Extremely large doses of alkali, 10 to 20 Gm of sodium bicarbonate daily, were given to keep the urine at p_H 7.5, and fluids were forced diligently. As soon as the p_H fell slightly the crystals appeared in the urine. In cases of meningococcic infection one is not dealing with such extremely high blood levels, but it is thought by most clinicians who have treated these patients for fulminating disease that it is essential to obtain promptly levels between 15 mg and 20 mg per hundred cubic centimeters. It must be pointed out, however, that these particular patients when first seen are dehydrated and in a condition of shock which tends to lessen renal blood flow. If the body is conserving fluids the urine will be extremely concentrated so that the percentage of drug in the tubular fluid may reach disproportionately high levels. This concentrated urine has a tendency also to be strongly acid, and forcing fluids must be undertaken at the very earliest moment. It has been the experience throughout the entire southeastern section that a large percentage of patients given intravenous medication develop hematuria, often gross hematuria, soon after the first intravenous injection. Retention of nitrogen may or may not accompany hematuria and occasionally develops even in the absence of hematuria.¹⁶ It should be emphasized, however, that when an adequate urinary output has been established and a change made at the same time from sulfadiazine to sulfanilamide treatment, with the use of alkali, the hematuria promptly clears up and retention of nitrogen disappears. In no case has there been evidence of more than temporary functional renal impairment, and I have seen nothing in the literature to suggest permanent renal damage from sulfadiazine.¹⁷ At one post this problem seems to have been solved successfully.¹⁸ Desperately ill patients are treated intravenously immediately with 1,000 cc of a sixth-molar solution of sodium lactate, followed by 5 Gm of sodium sulfadiazine in 5 per cent concentration in distilled water, followed by 1,000 cc

of a sixth-molar solution of sodium lactate, followed more slowly by 1,000 cc of a 5 per cent dextrose solution in 0.9 per cent saline solution. No patient treated by this technic has developed hematuria, in every one the urine was alkaline, diuresis was abundant and the blood level the following morning was usually in the region of 12 to 14 mg per hundred cubic centimeters. There is every reason to believe that this or some modification of this technic will eliminate hematuria from crystallization of a sulfonamide compound and at the same time afford a prompt high blood level of the drug.

At certain stations the subcutaneous injection of sulfadiazine in 0.5 per cent concentration in isotonic solution of sodium chloride has been advocated, and this injection is often given soon after the first intravenous injection. It is thought that such a procedure effects a slower rate of absorption and possibly a steadier blood level. At other stations excellent results have been obtained by using a Levine tube. Through this tube fluids, nourishment and salt as well as medication can be administered. In some of the more desperately ill patients adequate blood levels have not been obtained by oral use of the drug even when extremely large doses were given. For this reason when the ordinary dosage of 1 to 1.5 Gm every four hours does not maintain an adequate blood level intravenous medication with doses of 2 Gm should be employed as an extra. Usually after one or two doses have been given intravenously the patient regains consciousness to a degree which permits subsequent doses to be given by mouth.

Additional therapeutic measures have been used and should be mentioned. In cases of shock due to toxemia, blood transfusion and plasma infusion have been used with apparent benefit. Also in cases of shock adrenal cortex extract has been used in doses of 30 cc to 50 cc followed by smaller doses at frequent intervals with much benefit in the eyes of six observers. Other observers have not been able to convince themselves of beneficial effects. Epinephrine administered by the constant drip method seems to have had brilliant results in a few cases. Desoxycorticosterone acetate has been used but with a more delayed action and without clear-cut evidence of benefit. It seems possible that in patients whose adrenal glands have been damaged by hemorrhage, but who have been cured of the bacterial infection, this synthetic drug might play a beneficial role after the early stages. Three such patients are thought to have been cured in the series now being reported, and possibly many others.

Blood Level of the Drug—Exact information is not at hand as to what blood level of the sulfonamide compound is adequate in the treatment of each of the various clinical forms of meningococcic infection outlined in this article. In the literature are reports of cures from a dose as low as 1 Gm.¹⁹ At the opposite end of the scale is the widespread experience that in desperately ill patients large doses by mouth fail to give levels over 2 or 3 mg per hundred cubic centimeters. In the middle of the scale is a large group of patients who have recovered from clearcut meningitis on ordinary oral doses whose blood level either reached 10 to 12 mg or stayed down between 3 and 5 mg per hundred cubic centimeters. Attention should be drawn to an article

15 Fox, C. I., Jensen, O. I. and Mudge, G. H. The Prevention of Renal Obstruction During Sulfadiazine Therapy. J. A. M. A. 121: 1147 (April 3) 1943.

16 Houser, Major R. W. Personal communication to the author.

17 Harries, G. E. Cerebrospinal Fever. A Review of 500 Cases Treated by Chemotherapy Without Intrathecal Serum. Brit. M. J. 2: 423 (Oct. 10) 1942. Has reported that 1 patient treated in the Cardiff City Isolation Hospital died from anuria.

18 Peters, Lieut. M. A. Personal communication to the author.

19 Quoted by Dunlop, J. H. and Lindsay, Maxell. Dose in Treatment and Prevention of Meningococcal Meningitis. War Med. 2: 155 (Jan.) 1942.

By Dowling, Hartman, Feldman and Jenkins²⁰ comparing the mortality rates from lobar pneumonia in two series, one treated with an initial dose of 5 Gm by mouth and 1 Gm every four hours, and the other series with just half this dose. It was shown that the mortality rates were identical. It seems likely then that in many instances of meningitis excessive doses have been given and an excessive blood level has been maintained. On the other hand it seems clear that the more severely infected patients require higher blood levels than the patients whose disease is mild and moderate. This was shown to hold true for laboratory animals (mice) by Long, Bliss and Feinstone,²¹ who stated that "It is to be noted that the larger the dose of the drug the greater was the survival rate of the mice and that the average duration of life was longer for the more heavily treated mice." Patients have been observed who after two or three days on ordinary dosage have shown noticeable improvement when the size of the dose was increased. No harm has been seen from blood levels of between 15 and 25 mg per hundred cubic centimeters, and hematuria can be avoided by forcing fluids and alkalis. The problem arises as to whether or not administration of excessive amounts of fluid washes large amounts of the drug out of the system, thereby reducing the effectiveness of the treatment. It is thought that in most infectious diseases the urinary output should be maintained at between 1,500 and 2,000 cc in twenty-four hours, and this has proved satisfactory in cases of meningitis. The intravenous injection of fluid in the form of isotonic solution of sodium chloride and 5 per cent dextrose and sodium lactate and the administration of fluids by mouth or Levine tube should be regulated to the needs of the individual patient. Until further evidence is at hand the best rule is to obtain promptly a blood level of 12 to 15 mg per hundred cubic centimeters and maintain a level of 10 to 12 mg per hundred cubic centimeters until the patient is out of danger. After the first few days levels of 7 to 10 mg per hundred cubic centimeters or even lower will suffice to complete the cure. It is my impression that the level of the drug in the spinal fluid has little practical significance since the systemic, cerebral and meningeal locations of the infection are supplied with the drug by the blood stream and those organisms which reach the spinal fluid are essentially harmless.

Antimeningococcus Serum and Antitoxin—The problem of serum therapy has been largely discussed. My colleagues and I have nothing to add except that it is the universal opinion throughout the Fourth Service Command that ordinary antimeningococcus serum has been of no additional value in treatment. There is one group of patients who seem to have been benefited by meningococcus antitoxin namely the group with septicemia. Some of these are so toxic that they die in a few hours. It is clear that antibacterial treatment must have time to become effective and this time can be lengthened it is thought, by the use of antitoxin. This whole subject is in the course of being evaluated and at the present time the supply of meningococcus antitoxin is extremely limited. The antitoxic property is contained also in concentrated rabbit antimeningococcus serum but here again the supply of this product is extremely limited. Answers from a recent question-

naire throughout the army hospitals of the southeastern area reveal that 10 of 17 medical officers who have used antitoxin in more than one case believe it has had a distinct beneficial effect, noticeable within a few hours. One hundred and thirty-six of the desperately ill patients were given antitoxin, and at ten station hospitals the effect was thought to be either beneficial or extraordinarily beneficial in 56 cases. In 3 cases an immediate beneficial effect was noted. Those who are not impressed by its value point out that similar improvement is noticed in a few cases within two or three hours after the injection of sodium sulfadiazine. Final proof of the benefit of antitoxin therapy is not at hand. A warning must be issued that every precaution in the use of serum must be scrupulously observed, and patients with a history of allergy or recent serum treatment or those showing a positive cutaneous test should not be treated with serum or treated only after careful desensitization has been effected. There is no reason to believe that serum therapy properly administered is more dangerous to a patient in shock than to any other patient. Nor is there any reason to believe that intravenous injection of serum places any more strain on the heart and the peripheral vessels than intravenous injection of any other fluids. As long as anaphylaxis is avoided and fluids are injected into the vein slowly, no particular fear of this form of treatment need be entertained.

It is interesting to observe a graphic example of what early diagnosis and prompt efficient treatment can effect. During the first two months of this outbreak many unusual cases of meningococcic infection escaped early recognition by unit medical officers, various officers of the day and members of various sections of the hospital staffs until the disease was fairly far advanced. This with other factors is reflected in the mortality rates of 12.8 per cent for the month of December and 7.3 per cent for the month of January. During these two months only 317 patients with meningococcic infection were seen. In the next two months, after the technique of early diagnosis and treatment was learned, 761 patients were treated with a mortality of only 2.1 per cent. This excellent result was obtained by close cooperation among all the members of the army medical corps and by the individual personal attention of one or more officers who have been in charge of the patients at each of the various station hospitals. Cases of fulminating infection are still occurring, however, and are the ones which form the basis for the present mortality rate. In the month of April (which includes five weeks) there were 15 deaths out of 531 cases so that although the outbreak is definitely receding in some areas it is continuing with full virulence in others.

COMMENT

The experience with a large number of cases of meningococcic infection during the past two months has provided opportunity for wide employment of modern chemotherapy. The mortality rate in the first two months was reduced to one fourth of the rate in the last war and as experience and proficiency in diagnosis and treatment were gained this low rate was cut to one fourth, or 2.1 per cent in 761 cases occurring in the Army throughout the seven Southeastern states during the months of February and March. The feasibility and effectiveness of large scale prophylactic use of sulfadiazine in the reduction of carriers and the prevention of cases are being demonstrated. It has been possible then to compensate by improved methods of

20 Dowling, H. I., Hartman, C. K., Feldman, H. A., and Jenkins, J. A. The Comparative Value of High and Low Doses of Sulfadiazine in the Treatment of Intra-cerebral Pneumonia. *Am. J. M. Sc.* 207: 167-173 (Feb.) 1943.

21 Long, J. M., Latham, H. B., Hiegar, A., and Feinstone, W. H. The Mode of Action, Clinical Use and Toxic Manifestations of Sulfadiazine. *J. A. M. A.* 113: 1151-1154 (Jan. 1) 1939.

treatment and prophylaxis for the rapid training program which necessitated fatigue, exposure and crowding of unseasoned troops. It seems safe to prophesy that in succeeding years the case rate can be greatly reduced by prompt prophylactic treatment at suitable points, particularly among unseasoned troops. It seems equally safe to prophesy that the mortality from the cases that do develop will be held to low levels, although the occasional cases of fulminating disease probably will continue to produce a small number of deaths.

SUMMARY AND CONCLUSIONS

In a series of 1 518 cases of meningococcic meningitis and septicemia, the early mortality rate of 88 per cent in 317 cases was lowered during February and March to 21 per cent in 761 cases.

Two thirds of the cases developed among new troops.

Of 55 fatal cases 80 per cent developed among new unseasoned troops.

Of 46 cases coming to autopsy 18 showed hemorrhage into the adrenal glands. This is regarded as an index to the severity of the septicemia and presents an additional feature for therapeutic consideration.

Early diagnosis and prompt skilful treatment based primarily on administration of suitable sulfonamide compounds will still be important even if prophylactic chemotherapy proves highly effective.

THE TREATMENT OF BURNS OF THE EXTREMITIES

WITH CLOSE FITTING PLASTER OF PARIS CASTS

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AND

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BOSTON

Plaster casts have been used occasionally for many years by many surgeons for special indications in the care of surface burns. They have had particular use as splints to prevent deformity. For the most part such casts have been used in the secondary treatment of burns and have been well padded and loose fitting. Frequently they have been bivalved early to provide for frequent changes of whatever dressings were used under them. Lohr¹ in 1934 advocated the use of plaster casts over applications of cod liver oil ointment in the treatment of early burns. He attributed his good results chiefly to the cod liver oil. Roulston² in 1941 applied casts to burned extremities after maximum swelling had already occurred and infection was present. It was his opinion that epithelization and return of function were more rapid in these cases than in similar cases treated by other methods. Stonham³ in India treated old burns in closed plaster and gave the opinion that there was more maceration and persistence

of infection than when the wounds were left open. Zeno⁴ between 1937 and 1939 published a number of articles in several countries on the use of plaster casts in fresh burns. In the two of these articles studied⁵ the articles and one illustration indicate that tightly fitting casts were not used. Joints above and below the burn were immobilized but the cast was not closed over the end of the extremity. Casts were used for body burns as well as for burns of the extremities. Zeno felt that the good results obtained resulted from the immobilization provided by the casts. Afonso⁶ uses fairly close fitting casts over a thin tannic acid eschar. He presents abstract case reports on 8 cases with good results. Trueta⁷ recommends a close fitting cast for burns of the extremities, back and neck. He applies them over a thin tannic acid eschar after debridement. Most of his experience was with cases in which maximum swelling had occurred before the cast was applied. Cohen⁸ also treated a few similar cases with casts but without tannic acid. Barnes⁹ has recently reported the use of close fitting casts for burns of the hands, using a technic identical in principle to that reported here. It differs only in the use of debridement, in the use of less gauze to absorb secretions and in the insistence on suspension.

The possibility that plaster casts might serve a useful function besides providing rest and protection in the treatment of burns was not appreciated until the physiologic studies of Glenn, Peterson and Drinker¹⁰ and of Glenn, Gilbert and Drinker¹¹ indicated the harm produced by the swelling of the burned tissues. They also showed that the application of a close fitting plaster cast immediately after the burn would prevent swelling and at the same time the circulation in the burned extremity was unimpaired, whereas the circulation in the untreated foot showed definite indications of impaired capillary flow. Barnes and Trueta¹² had already shown that swelling could be prevented in this way.

In their experiments Glenn and his co-workers¹² pointed out certain specifications that must be followed if the closed plaster cast treatment is to be fully successful. First, the burn must be so located that the plaster may extend a few inches above the upper edge of the burn. Second, the plaster must be closed at the lower end and fit evenly and closely to the skin at all points. Third, compression of the tissues at

4 Zeno, L. Tratamiento de las quemaduras simples y complicadas mediante el enyesamiento, Bol y trab de la soc de cir de Buenos Aires 22 712 722 (Sept) 1938. Zeno, L., and Berenboym, S. Plaster of Paris Bandage in Therapy of Burns of Extremities, Novy Khir Arkh 38 485, 1937. Zeno, L. and Kaplan, A. V. Plaster of Paris Bandage in Therapy of Burns of Extremities, Vestnik Khir 51 16 18, 1937. Zeno⁵

5 Zeno, L. Tratamiento de las quemaduras simples y complicadas mediante el enyesamiento, Arch Urug de med, cir, y espec 14 322 324, 1939. Tratamiento biologico das quemaduras, Arq brasil de cir e ortop 6 295 301, 1938.

6 Afonso, J. Tecnica de Zeno para o tratamento das quemaduras, Arq brasil de cir e ortop 6 302 309, 1938.

7 Trueta, J. The Principles and Practices of War Surgery, St Louis, C. V. Mosby Company, 1943 pp 405 413.

8 Cohen, Solly M. The Treatment of War Burns, Brit M J 2 251 (Aug 24) 1940.

9 Barnes, J. M. Treatment of Burns, Brit M J 1 408 410 (April 3) 1943.

10 Glenn, W. W. L., Peterson, D. K., and Drinker, C. K. The Flow of Lymph from Burned Tissue, with Particular Reference to the Effects of Fibrin Formation on Lymph Drainage and Composition, Surgery 12 685 (Nov) 1942.

11 Glenn, W. W. L., Gilbert, H. H., and Drinker, C. K. The Treatment of Burns by the Closed Plaster Method with Certain Physiological Considerations Implicit in the Success of this Technic, J Clin Investigation 22 609 (July) 1943.

12 Barnes, J. M., and Trueta, J. Absorption of Bacteria, Toxins and Snake Venoms from the Tissues. Importance of Lymphatic Circulation, Lancet 1 623 (May 17) 1941.

From the Burn Assignment of the Surgical Services of the Boston City Hospital and the Department of Surgery of the Harvard Medical School.

The work described in this paper was done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Harvard University.

Drs Glenn and Drinker and Mrs Gilbert of the Harvard School of Public Health allowed us to see many of their animal experiments, made their manuscript available to us in advance of publication, showed interest and gave us advice in the treatment of our clinical cases.

1 Lohr, W. Ueber die Lebertransalbenbehandlung (mit und ohne Gipsverband) bei frischen Verletzungen, Verbrennungen und phlegmonösen Entzündungen, Zentralbl f Chir 61 1686-1695, 1934.

2 Roulston, T. J. Closed Plaster Treatment of Burns of the Extremities, Brit M J 2 611 (Nov 1) 1941.

3 Stonham, Franklyn. Closed Plaster Treatment of Burns of Limbs, Brit M J 1 737 (June 13) 1942.

the time of application must be avoided. Fourth the benefits of the treatment decrease according to the amount of swelling that precedes the application of the plaster. Their demonstration of the safety, comfort and good end results secured by this method were so impressive that application of the method to human burns has been made although it is seldom possible to treat the latter before some swelling has occurred.

METHOD

If shock or other systemic disturbance is present it is treated by accepted practices at the time the cast is applied. There is but little shock caused by the treatment itself as no anesthesia, debridement nor cleaning is done except for the removal of large pieces of loose, hanging skin. This preliminary procedure is recommended for human burns by Cope¹³ and has been demonstrated by him to give good results when combined with the pressure dressings of Allen and Koch.¹⁴

One layer of sterilized petrolatum gauze is applied to the skin over the whole area to be covered by plaster. This is fitted exactly and is carefully placed between the fingers. This petrolatum gauze is cut from 44 mesh 3 inch wide rolls of bandage. This layer is covered with four layers of sterile open mesh gauze, fitted carefully without overlapping. The gauze does not go between the fingers but does surround the thumb. Boston City Hospital abdominal sponges happen to be



Fig 1 (case 1)—Appearance of hand before treatment. Note broken and unbroken blisters. Sooty appearance from electric flash.

folded in such a way, 24 inches long and 4 inches wide, that they are convenient for this purpose. Very thin plaster slabs are then moistened and molded over the extremity front and back. A thin layer of rolled plaster completes a nearly skin tight, light well fitting plaster which extends 3 to 4 inches above the burn. The fingers are placed in a semiflexed position. Fifteen hundred units of tetanus antitoxin is given at once and this dose is repeated in five days. Sulfadiazine is started in twelve to twenty-four hours only in the cases in which, in addition, severe burns are present in other parts of the body. It is continued as long as it seems to be indicated. The original cast is left in place for fourteen days. If the burn has not healed at the time of its removal, another is applied at once and left on for a further period of fourteen days, since infection if present, sets in motion a train of events (increased lymph flow, swelling and so on) fundamentally similar to that following the original thermal injury. Further treatment, if necessary, after the fourth week is by other methods. Surface cultures are taken on admission and at each subsequent dressing.

13 Cope Oliver. Care of the Victims of the Coconut Grove Fire at the Massachusetts General Hospital. New England J. Med. 229: 138 (July 22) 1943.

14 Allen H. S. and Koch S. L. Treatment of Patients with Severe Burns. Surg. Gynec. & Obst. 74: 914-924 (May) 1942.

REPORT OF CASES

All the burns studied in this series were of the hands and arms. It is our intention to treat burns of the feet and legs in the same way but no suitable cases have been available to date. The cases are numbered in order of admission to the hospital. They are divided

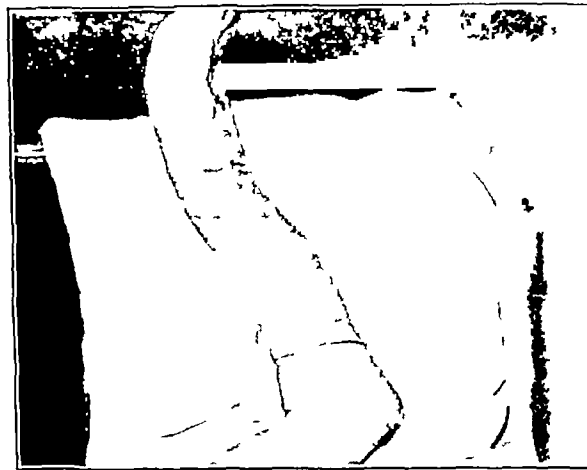


Fig 2 (case 1)—After five days. Note median position of fingers. Slight exudate stains the cast.

into two groups. Group 1 is made up of those with burns that proved not to have total destruction of skin in any areas of the hands or arms (second degree burns) and group 2 of cases with burns of the hands that have proved to have destruction of full thickness of the skin in one or more areas (third degree burns).

GROUP 1

CASE 1 (Figs 1-5)—An electrical worker aged 33 swung a lantern against a "third rail." The electric flash knocked him down. Examination showed the left hand covered on both sides with soot, slight swelling and a few intact and many ruptured blebs of skin. The surface area involved was about 2 per cent. Cultures were taken from the surface and petrolatum gauze strips and a cast applied ninety minutes after the time of injury. During the first forty-eight hours there



Fig 3 (case 1)—After twenty-four days. Second cast removed. Note ability to flex hand.

was a dull pain in the hand and wrist but no throbbing or paresthesia. At twenty-four hours there were slight edema and redness proximal to the cast for 2 inches on the mesial side. Because of the swelling he was given oral sulfadiazine for one week starting at thirty-six hours. The swelling subsided in two days. There was no lymphadenitis or lymphangitis. He was afebrile throughout. A small area of staining from exudate appeared on the cast. The culture from the burn

surface was reported to show alpha hemolytic streptococcus, hemolytic *Staphylococcus aureus* and *Bacillus subtilis*.

At eleven days the cast was removed. This was a painless procedure. There were small amounts of moist exudate present, particularly on the anterior wrist. The layer of soot and dirty epithelium was intact on the hand. Because of the deeper burn at the wrist which had not completely healed, a new

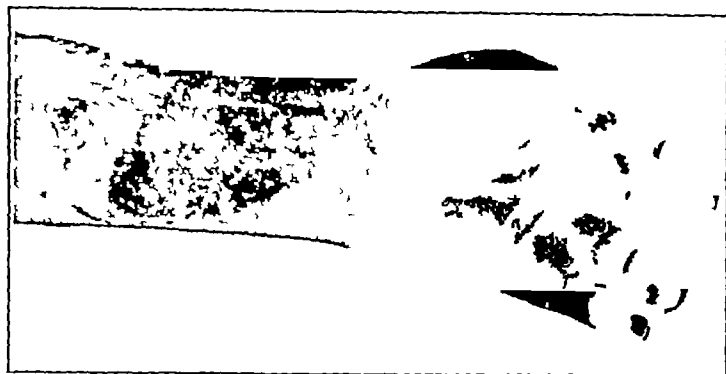


Fig. 4 (case 1)—After twenty-four days. Second cast removed. Note hand in median position.

cast was applied. Culture at the wrist showed alpha hemolytic streptococcus, hemolytic *Staphylococcus aureus*, *Clostridium perfringens* and *Pseudomonas aeruginosa*, with the latter predominating.

During the next two weeks absence of fever and pain continued and there was no swelling proximal to the cast. At twenty-four days from injury the second cast was removed. The wrist burn was partly healed.

The burns of the hand had completely healed under the dark layer of desquamating epithelium. Motion of the fingers was fairly good. There was no pain. A small petrolatum dressing was applied to the wrist. At five weeks all desquamating epithelium was off the hand, the wrist was healed and motion in the hand and fingers was normal.

CASE 4 (Figs. 6 and 7)—An electrician aged 34 was burned in an explosion of an oil heater. He had burns with blisters and broken blisters of both sides of all fingers, both hands and both wrists and of the right forearm, elbow, part of the arm and part of the face. About 10 per cent of the surface area was involved. There was also some respiratory irritation from inhalation. Surface cultures were not taken on admission. Casts were applied over petrolatum gauze dressings ninety minutes after the accident. The patient was moderately dyspneic.

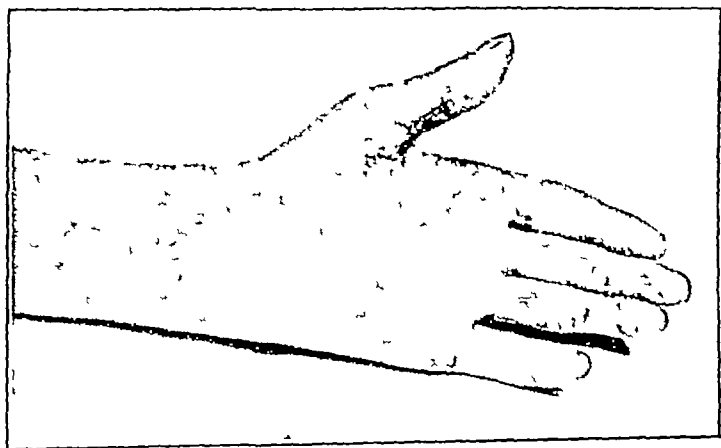


Fig. 5 (case 1)—After forty days. Complete healing with excellent function was present for ten days before this picture was taken.

and there were crepitant rales throughout the lung fields. The temperature rose to 102.0 F the first two days, fell to 100 on the fourth day and remained normal thereafter. Oral sulfadiazine was started at twelve hours. It is our impression that this fever was of pulmonary origin. The casts were removed on the eleventh day and second casts were applied. There was no swelling or sepsis, and minimal exudate was present. Motion was good. Cultures at this time showed alpha hemo-

lytic streptococcus, hemolytic *Staphylococcus aureus*, *Bacillus subtilis* and *Pseudomonas aeruginosa* present on both hands. At twenty-three days, when the second casts were removed, healing was complete and function was good.

CASE 5—A member of the fire department aged 43 had to escape from a roof through a wall of flame. He received a first degree burn of his face, small second degree burns of both knees and second degree burns of both hands. The surface area involved was about 5 per cent. Many broken blebs were present. The dorsum of the right hand and fingers was covered with large unruptured blebs. Without cleaning, petrolatum gauze and casts were applied to both hands and forearms two hours after the injury. His hands were very comfortable in the casts and there was no fever. At two weeks the casts were removed. The left hand was healed and normal. The right hand was covered with a thick layer of desquamating epithelium. Motion of wrist was normal and of fingers 60 per cent. A cast was applied to this hand for two weeks more. At four weeks healing was complete and motion of fingers was very good.

CASE 6—A member of the fire department aged 30 was burned at the same time and in the same way as patient 5. His burns were less severe. There were burns with blisters of the dorsal aspect of all fingers and of both hands and additional burns of the face. The total area was about 3 per cent. Casts were applied to both hands up to the midforearm.

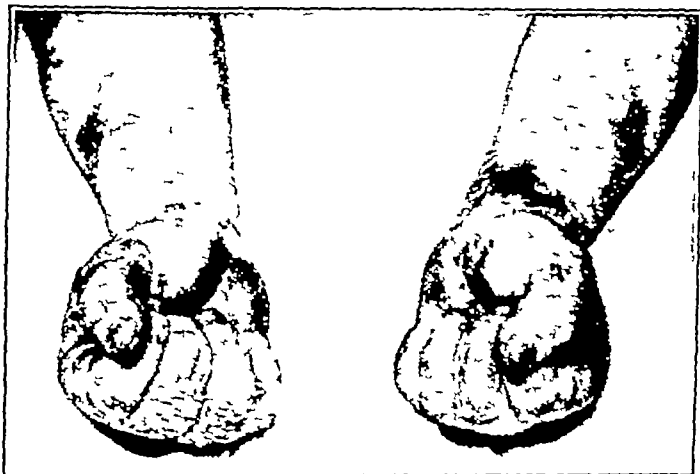


Fig. 6 (case 5)—Eleventh day. Condition on removal of first casts. Note free flexion.

Cultures on admission showed "no growth." Normal recovery occurred. On removal of the casts at fourteen days complete healing had occurred. Motion was normal. There was no exudate on the dressing.

CASE 7—A schoolboy aged 9 years lighted a pile of gunpowder and received burns of the right hand and face. There were blisters on the right hand and fingers and a large denuded blister of the right wrist. A moderate amount of soot was present in the burned skin. The total area was 4 per cent. Cleaning was not done. Petrolatum gauze and a plaster cast were applied two hours after the accident. Culture showed "no growth." The temperature went daily to 100 F for one week with no rise thereafter. The cast was removed on the fourteenth day, when healing was complete and function normal.

CASE 8—A man aged 63 received gasoline flame burns of the second and third degree of the entire right leg and thigh, the inner aspect of the left leg and thigh, the lower part of both buttocks, and a long narrow strip across the abdomen. Parts of these burns were dirty dead white, parts were leathery and still other parts were oozing from broken blisters. The right hand also was burned and showed blebs and broken blebs over the dorsum of all fingers, the hand and wrist. The total area of the body burned was 25 per cent. A cast was applied to the hand and forearm, but other treatments to the legs and abdomen. He was given 1,500 cc of plasma in the first twenty-four hours.

The hand was very comfortable in the cast. On the fourth day he developed bronchopneumonia, although on sulfadiazine.

treatment from the twelfth hour. After a week he began to improve but remained a very sick man. On removal of the casts at fourteen days the hand was completely healed and motion was normal.

CASES WITH DEEP BURNS OF THE HAND

CASE 2—A chronic alcoholic addict aged 32 set his bed on fire smoking. He was moderately intoxicated and had a blood plasma alcohol level of 0.026 Gm per hundred cubic centimeters. There was a deep burn of the whole circumference of the right arm from the finger tips to the axilla. It extended over the shoulder and down the flank to the lateral abdominal wall. This whole area was burned so that the skin was leathery and not weeping. There was a less severe burn of the left hand from the finger tips to the upper forearm. The total area was 20 per cent. Both hands and arms were placed in plaster casts. On the right arm a petrolatum dressing compressed with an Ace bandage was continued above the cast to cover the remainder of the burn on the shoulder and axilla and over the flank.

During the first twenty-four hours he was given 4000 cc of plasma and in the second 1,000 cc. His blood pressure was always maintained, but his urine output was only 300 cc the first twenty-four hours. He went into very severe delirium tremens that did not respond well to very large doses of vitamins or to the usual doses of paraldehyde. On the fourth day he had some symptoms of pneumonitis but adequate chest

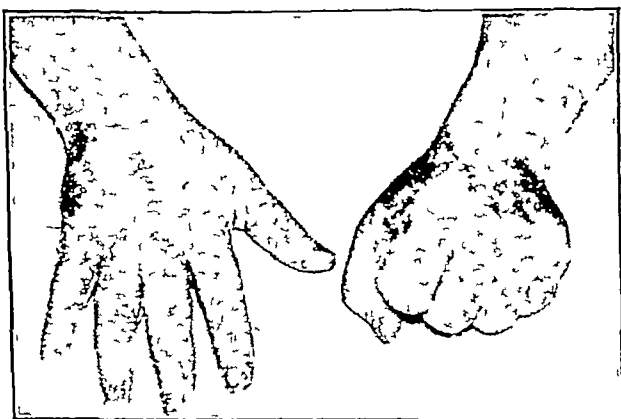


Fig 7 (case 5)—Twenty-third day. Condition after removal of second casts and cleaning. Complete healing and complete return of function.

examination could not be made because of large body dressings. On the eighth day spastic symptoms suggested meningitis but a lumbar puncture secured normal spinal fluid. This stiffness did not suggest tetanus and improved steadily up to the time of his death. Death occurred on the ninth day.

The casts were removed post mortem. Complete destruction of the skin over nearly all the burned area was seen. This destruction was as severe where no cast was applied as it was under the cast. There was much more moisture and other evidence of infection in the areas not treated with the cast than under it. However, the skin of the third, fourth and fifth fingers of the right hand was almost completely destroyed, so that the posterior tendons were exposed as well as the proximal interphalangeal joints. In spite of this destruction there was obvious circulation still maintained to the tips of these fingers on the palmar surface. The autopsy showed that death had occurred as a result of massive bronchopneumonia.

CASE 3 (Figs 8, 9 and 10)—A housewife aged 35 was removed deeply intoxicated and burned, from a burning apartment. A strong odor of alcohol was present and the blood plasma alcohol level was 0.056 Gm per hundred cubic centimeters. Crepitant rales were present in both lung fields. There was definite exposure to smoke inhalation. There were burns of the whole hand and forearm to 1 inch above the elbow. Over this area most of the blisters had broken and the epidermis

was missing. Much of the skin was leathery and dry, especially the last three fingers and a large area below the elbow. These areas appeared to be third degree burns. There was also a burn of the lateral surface on the left leg and buttock that was dry, brown and leathery in appearance. There were other severe burns of the right buttock and slight burns of the face. The surface area involved was 15 per cent. A cast



Fig 8 (case 3)—Thirteenth day. Cast and dry gauze removed. Petrolatum strips in place. Note small amount of exudate.

was applied to the arm up to the axilla with the elbow extended to 120 degrees. Other dressings were applied to other areas. During the next few days the patient was very sick with delirium tremens and pulmonary irritation.

At thirteen days the cast was removed. It was remarkable in two ways. First, there was but little pain in removing it and secondly there was very little discharge on the dressing. There was dry leathery natural eschar of the skin of the medial three fingers. Another cast was applied and left on ten days. When removed, it was seen that the extensor tendons of the medial three fingers were exposed over the proximal interphalangeal joints. There was but little pain and tenderness and little swelling. Motion was good even in these fingers. Following removal of the second cast, treatment was shifted to irrigation in a 'Bunyan' envelop. She was ready for grafting on the fifty-second day but the presence of scarlet fever in the ward caused a delay. On the sixty-sixth day Padgett dermatome grafts were applied to all areas of granulation on the hand, forearm and leg. On the seventy-sixth day at the first dressing of the grafts, all had taken except over the exposed bones of the three lateral fingers.

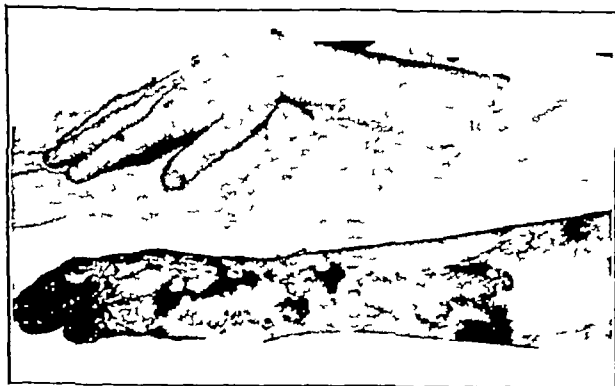


Fig 9 (case 3)—Thirteenth day. Petrolatum strips removed. Note minimal swelling.

COMMENT

A satisfactory treatment for burns should be locally and generally harmless, comfortable and easy to apply from widely available materials of minimum bulk. It should also give protection against the invasion of harmful organisms and protect the natural defenses of the body in their contest to control those already present. It should reduce as much as possible the

flow of plasma or exudate from the burned surface or the collection of edema under it. It should also need a minimum of attention after application. Finally it should allow the natural healing processes of the body to create and maintain as nearly optimum conditions for the removal of dead tissue and for the growth of new cells as possible. This will be recognized by most readers as practically identical with the position that H. W. Orr has maintained for years in connection with infections. He has just published a fine discussion of this subject.¹⁵

ABSENCE OF LOCAL HARM

It is difficult in clinical studies of burns to prove whether a given treatment is harmful or not because of the impossibility of estimating accurately in all cases at the time of initial treatment the extent of the damage already done by the burns. Certainly the early return of function that has been seen in these cases immediately after removing the casts is an indication that the method is usually harmless. It is further our impression that no areas of second degree damage have been converted to third degree by this method and that epithelization takes place at a rapid rate.

A certain warning concerning the technic of application should be given as it is theoretically possible to

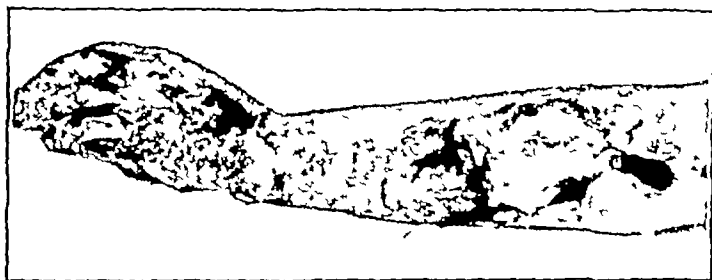


Fig. 10 (case 3) — Twenty-third day. Large areas of skin have sloughed exposing tendons. At this time there was a surprising range of motion.

do great damage by the improper application of these casts. The cast must extend over the tips of the fingers or toes even when the burn does not, and it must not provide any zones of increased pressure at any point. Glenn, Gilbert and Drinker¹⁶ present a photograph of a badly swollen foot when a cast was applied to the lower part of the leg of a dog without including the foot.

ABSENCE OF TOXIC ABSORPTION

Tannic acid and picric acid have been absorbed from burns treated with these materials to such an extent that liver necrosis and death have been attributed to this absorption.¹⁵ Nothing harmful can be absorbed from the surface of burns treated with this method except the products of the burn itself or the products of bacterial invasion. Barnes and Trueta¹² have shown that absorption of foreign materials is greatly delayed from immobilized tissues. This finding is easy to understand in the light of the work of Glenn¹⁶ and his associates, who have shown definite decreases in the flow of lymph from burns treated with casts compared with ones not thus treated. A cast also protects against reinfection from new organisms. At the same

time, according to Barnes and Trueta,¹² the organisms already present either die out or become harmless. This point of view is confirmed by the experience of Cope,¹³ who found a remarkable tendency for organisms to become harmless under the pressure dressings that he used.

COMFORT

From the start of treatment to complete healing the lack of pain experienced by these patients has been remarkable. As soon as the cast is applied, pain disappears. There may be a slight dull ache, experienced by 3 of the 8 patients, in the first three days. After this there is no discomfort and the arm in the cast can be moved freely. No throbbing pain, anesthesia or paresthesia has been noted. The patient can move the fingers a millimeter or so inside the cast, but this motion is painless. Removal of the cast at fourteen days is done without the aid of analgesia or anesthetic as practically no pain results, even during the use of a cast cutter. Apparently the lack of edema or the absence of active infection in the tissues avoids the condition of extreme sensitivity to handling that is frequently seen at this time in comparable burns.

EASE OF APPLICATION

Close fitting plaster casts are relatively easy to apply, and the bulk of material (excluding water) is very little. Most doctors need no additional training in methods of applying plaster casts, although some may need encouragement before they will leave out the bulky materials customarily used in padded casts. Any man who has applied a satisfactory "skin tight" plaster to a fracture will have no difficulty at all with these casts. In our experience it is difficult for the ordinary physician to apply a Koch dressing to a burn. It necessitates quite a long experience with such dressings before a really satisfactory one is made. The bulkiness of the materials needed, especially the mechanic's waste, cellucotton or sheet wadding, may make it difficult to stock sufficient supplies where transport or storage is scanty.

LOSS OF PLASMA

The minimal subcutaneous edema in and adjacent to the burned area possible under the cast, and the small amount of surface ooze that occurs, reduce to some extent the need for plasma replacement. If the area treated by the cast is extensive, the saving should be considerable.

INFECTION

Superficial sepsis was minimal in all cases, with only a small amount of exudate present on the dressings. Cultures showed a mixture of organisms, with none predominating except in 1 case in which *Pseudomonas aeruginosa* was predominant. Self-limited cellulitis, unaccompanied by systemic reaction, was present in 1 case. None of the 3 patients whose burns were limited to the hands and arms developed any fever.

AFTER-CARE

During the time the cast is on, no time needs to be spent in doing dressings to the casted area. If the cast cracks from being made too thin, repair is easy. (The cast should be as thin as possible.) If the patient has to be moved during the period when the cast is on, no better protection against the normal traumas of transportation can be devised.

¹⁵ Orr, H. W. The Physiologic Factors Involved in Protecting the Patient Against Infection in the Healing of Fractures in Compound Wounds, *Tr. & Stud. Coll. Physicians Philadelphia* 10: 187, 193, 1943.

¹⁶ Glenn, Peterson and Drinker¹⁶ Glenn, Gilbert and Drinker¹¹

HEALING

In the last analysis healing can take place only when natural defenses have created such conditions at the site of healing of temperature, pH salt content of the fluids, oxygen and carbon dioxide tension, nutritive elements, and enzymes that tissue cells can grow. In addition, toxic substances must be absent. Infrequency of disturbance of the environment of the injured area is therefore very important because with each change of dressing one or more of these factors may be upset and hours or days must elapse before proper conditions can again be achieved. Under one of these casts such disturbances of accidental nature are almost entirely prevented and those of deliberate nature (which may be just as harmful as the accidental ones, or even more harmful) such as arise from the curiosity of the doctor to see what is happening are largely discouraged. We believe that the healing of the skin has been as rapid as in similar cases treated in other ways and that return of motion has been more rapid.

INDICATIONS FOR THIS TREATMENT

In this series, cases with burns of the hands, forearm and arms have been treated. In only 1 instance (case 2) did the burn extend above the cast. A pressure dressing was applied above this cast. There was no evidence of impairment of circulation. Zeno,⁵ Afonso⁶ and Trueta⁷ have all used plaster casts on areas that we have not treated as yet. We are sure that this treatment is indicated for burns of the feet and legs. As we gain experience in the method we may well extend the indications more widely.

SUMMARY AND CONCLUSIONS

1. Close fitting plaster of paris casts have been used in the treatment of burns of twelve hands on 8 patients.
2. The physiologic experiments of Glenn and his associates formed the scientific background for this treatment.
3. The treatment is easy of application. The materials needed are widely available and of little bulk. Ideal protection against intercurrent infection and against the trauma of transportation is afforded.
4. The prevention of swelling and the protection provided by the treatment have resulted in comfortable rapid, uncomplicated convalescences and in excellent functional results.

ADDENDUM

Up to September 7, 14 additional patients have been treated by this method with casts applied to sixteen arms and hands, four chests and four legs. Four of the arms and hands and all the legs had third degree burns. The results of these applications of plaster have been very satisfactory.

319 Longwood Avenue

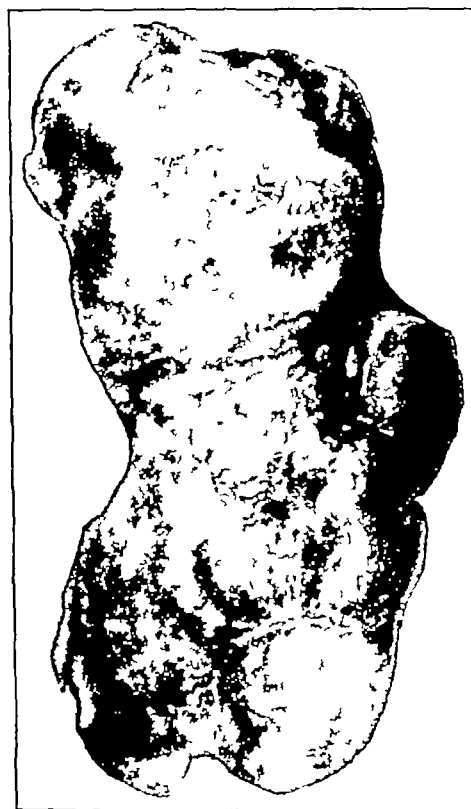
By-Products from Sewage—Trucks rumbling through the streets of oil starved Germany today are operating on methane gas, obtained as a by product from municipal sewage treatment plants. In Bradford England sewage disposal processes are yielding 500 tons weekly of vitally needed grease. In the United States a big steel plant is buying huge quantities of liquid effluent from a city sewage plant because existing industrial water supplies are inadequate to meet expanded output. These three examples dramatize what might be considered the ultimate in deriving salvage from waste. They focus attention on one of the least suspected sources of valuable by-products—the city sewage disposal system—Cleary, Edward J. Dollars from Sewers, *Scientific American*, September 1943, p. 106.

Clinical Notes, Suggestions and New Instruments

FAILURE OF NEPHRECTOMY TO INFLUENCE HYPERTENSION IN UNILATERAL KIDNEY DISEASE

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Experimental production of hypertension by partial occlusion of the blood supply to one kidney¹ has suggested that intrinsic unilateral renal disease in man can similarly cause arterial hypertension. The acceptance of this thesis has led to the search for unilateral disease in hypertensive patients and, when found, to nephrectomy of the suspected kidney. Seventy-six published case reports of attempts to cure hypertensive disease in man by removal of a diseased kidney have been reviewed in detail by Smith, Goldring and Chasis.² In the opinion of



Pyelonephritic left kidney weighing 33 Gm

these authors, in only 7 of the 76 patients has nephrectomy been successful in reducing the elevated blood pressure to the normal range.

It has been argued that failure to reduce the blood pressure in a patient with a long-standing unilateral kidney disease and hypertension might be explained on the basis of irreversible vascular changes in the remaining kidney capable of maintaining the hypertensive process. This report is made because nephrectomy failed to reduce the blood pressure of a patient in whom postoperatively the remaining kidney is not diseased and has a normal blood flow per unit of functioning renal tissue.³

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¹ Goldblatt, Harry, Lynch, James, Hanzal, R. F. and Summerville, W. W. Studies on Experimental Hypertension. I. The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia. *J. Exper. Med.* 59: 347 (March) 1934.

² Smith, H. W., Goldring, William and Chasis, Herbert. Is Essential Hypertension of Renal Origin? *Bull. New York Acad. Med.* to be published.

³ Smith, H. W., Goldring, William and Chasis, Herbert. The Measurement of the Tubular Excretory Mass, Effective Blood Flow and Filtration Rate in the Normal Human Kidney. *J. Clin. Investigation* 17: 263 (May) 1938.

REPORT OF CASE

History—S. H., a white woman aged 34, seen in October 1941, complained of high blood pressure, headache and slight fever. She had been in good health until a year and a half before, when her fourth and last child was born. Following delivery she had a fever which lasted three weeks, and during this time there were occasional chills. For about six months she was relatively well, and then she began to feel weak and listless. She complained of headaches in the temporal region, described as dull, and at the top of the head, described as burning. Other aches and pains had been present and she also suffered from insomnia. The temperature and blood pressure were both found to be slightly elevated.

There were no other serious illnesses in the previous history. After the third pregnancy five years before there had been a febrile illness diagnosed as a "slight touch of pneumonia." The patient had been ill for only a week and was quite well afterward. The systemic review disclosed nothing of importance.

She did not know of any history of hypertension or cardiovascular renal disease in her family.

Unconscious feelings of guilt and hostility seemed to be important features of her personality. Outwardly passive and pleasant, inwardly she exhibited a great deal of resentment toward her husband and her mother.

Effective Renal Blood Flow, Glomerular Filtration Rate and Maximal Tubular Excretory Capacity Before and After Left Nephrectomy

	Renal Plasma Flow (Cc per Minute)	Filtration Rate (Cc per Minute)	Maximal Tubular Excretory Capacity (Tmm) Mg Iodine per Minute	Renal Plasma Flow Max Tub Excret Cap (Cc/Tmm)
<i>Preoperative Observations—March 27, 1942</i>				
Right kidney	386.2	84.2	45.4	8.5
Left kidney	50.7	17.0	3.0	16.4
Total	441.0	101.2	48.4	9.1
<i>Postoperative Observation—June 5, 1942</i>				
Right kidney	592.6	95.8	48.4	12.2
Normal *	694 ± 102.4	117 ± 15.6	42.6 ± 9.46	14.2 ± 2.46

* The diodrast clearance was used to measure the effective renal blood flow⁴, the mannitol clearance to measure the rate of glomerular filtration⁵ and the diodrast saturation method to determine the maximal tubular excretory capacity⁶. Values given at the bottom of the table are based on observations in normal female subjects.

Physical Examination and Laboratory Studies—The general physical examination did not disclose any abnormalities. Gynecologic examination was negative. The eye grounds showed mild attenuation of the retinal arterioles. There was no evidence of arteriosclerosis and no retinitis. There was moderate elevation of blood pressure, which varied between 150 to 170 systolic and 90 to 120 diastolic. There was an occasional slight elevation of the temperature to 99.3 F. Urinalysis and Wassermann tests were negative and the blood count was normal. The sedimentation rate was 14 mm and the basal metabolic rate was minus 6 per cent.

Culture of the urine showed many coliform bacilli, and an intravenous urogram showed that the left kidney was much smaller than normal with a deformity of the calices which suggested pyelonephritic contraction. The right kidney was larger than normal and presented a normal appearance.

Retrograde pyelography of the left side was then done, and this showed irregular and distorted major and minor calices which suggested a cicatricial deformity. This was in keeping with the diagnosis of chronic pyelonephritis. The same type of organism was obtained from direct culture of the left kidney.

The patient was placed on sulfathiazole medication, and the Addis count showed a slight excess of white blood cells and many sulfathiazole crystals. Medication was then changed to sulfadiazine, which was well tolerated. Cultures of the urine following the administration of sulfadiazine were negative.

The patient was studied again in December 1941. The blood pressure was higher than before, 185/135. Slight fever (99.5 F) continued. A left retrograde pyelogram was the same as before. Culture of the urine was negative.

Operative Findings—A small left kidney weighing 33 Gm was removed in April 1942 (shown in the illustration). The capsule was thin and stripped with ease. The capsular surface was definitely lobulated. The cut surface of the kidney showed a normal relationship of cortex and pyramids. The pelvic mucosa seemed of normal thickness and there was no gross evidence to suggest inflammation or scarring. The larger blood vessels showed nothing abnormal on gross examination. The lining was smooth and the contents resembled old blood.

Sections of the kidney were studied by Dr. E. E. Aegerter and by Dr. Irving Graef. It was agreed that the scarring was of the type commonly seen in healed or chronic pyelonephritis. This was confirmed by microscopic examination which showed that the indentations were the result of scarring typical of the late stage of pyelonephritis.

The glomeruli seemed almost normal in appearance and number. There were 47 glomeruli in a low power field compared with 62 in a normal adult kidney. Individual glomeruli showed no replacement fibrosis or reduction in size. There was no patchy cortical atrophy or failure of development of the tubules. There was arteriosclerotic involvement of the medium sized branches of the renal artery and hypertrophy of the afferent arterioles.

The section which included the pelvis and calices showed rich lymphocytic infiltration beneath the epithelium. The tubular remains in the scarred areas also exhibited the typical dilatation and colloid type of cast seen in pyelonephritic scars.

Postoperative Course—Following the operation the blood pressure was even higher than before, with levels of 170 to 200 systolic and 120 to 140 diastolic. The patient was seen about every two months. The last observation was in April 1943, twelve months after the operation. Symptoms were no different, although there had been a slight gain in weight. She "loses one ache and gets another." Fatigue and shortness of breath (sighing respirations) were now a prominent part of the clinical picture. It was concluded that the occasional slight rise of temperature did not indicate infection but was normal for the patient.

The glomerular filtration rate,⁴ the effective renal blood flow⁵ and the maximal tubular excretory capacity⁶ were measured in the separate kidneys preoperatively and in the remaining right kidney postoperatively⁶. The results of these observations are presented in the accompanying table.

COMMENT

The preoperative observations on this patient revealed extreme functional impairment of the left kidney. The glomerular filtration rate, effective renal blood flow and maximal tubular excretory capacity were definitely reduced. The functional size of the diseased kidney was approximately one-seventh the normal kidney. These measurements also indicated the presence of a large number of impotent nephrons, that is, nephrons which had lost their excretory power but continued to act as conduits in conveying urine to the collecting tubules.

The glomerular filtration rate, the effective renal blood flow and the maximal tubular excretory capacity in the right kidney was increased above one half the mean normal value. This was interpreted as indicating hypertrophy of the right kidney, the stimulus probably being long-standing disease of the contralateral kidney. The ratio of renal blood flow to tubular excretory capacity, which expresses the amount of blood going to functioning tubular tissue, was decreased, indicating relative ischemia in this hypertrophied right kidney.

Postoperatively the right kidney shows an increase in effective renal blood flow, glomerular filtration rate and maximal tubular excretory capacity, this one kidney, functionally speaking, is now the equal of two normal kidneys. The ratio of blood flow to functional tubular tissue is now in the normal range.

4 Smith, W. W., Finkelstein, Norma and Smith, H. W. Renal Excretion of Hexitols (Sorbitol, Mannitol and Dulcitol) and Their Derivatives (Sorbitan, Isomannide and Sorbide) and of Endogenous Creatinine-like Chromogen in Dog and Man, *J. Biol. Chem.* 135: 231 (Aug.) 1940.

5 Goldring, William, Chasis, Herbert, Ranges, H. A., and Smith, H. W. Relations of Effective Renal Blood Flow and Glomerular Filtration to Tubular Excretory Mass in Normal Man, *J. Clin. Investigation* 19: 739 (Sept.) 1940.

6 Chasis, Herbert, and Redish, Jules. Function of the Separate Kidneys in Hypertensive Subjects, *Arch. Int. Med.* 70: 738 (Nov.) 1942.

The persistence of hypertension in this patient postoperatively indicates that the unilateral atrophic pyelonephritis was not causally related to the hypertensive process. Furthermore, the fact that the renal blood flow per unit of functioning tissue is in the normal range in the remaining kidney excludes the possibility that chronic irreversible vascular changes resulting in ischemia of this kidney is maintaining the abnormal elevation of blood pressure. The fact that the hypertensive process was of relatively short duration strengthens this view. It appears that the intrinsic unilateral disease present in this patient was not the cause of the arterial hypertension.

CONCLUSION

The removal of a chronic atrophic pyelonephritic kidney failed to lower the blood pressure of a hypertensive patient. The remaining kidney cannot be indicted for this failure, since it is neither diseased nor ischemic. It is concluded that the intrinsic unilateral renal disease in this patient was not causally related to the arterial hypertension.

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THE USE OF HUMAN FIBRINOGEN IN RECONSTRUCTIVE SURGERY

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The successful application of the principles involved in the use of human fibrinogen is thought of sufficient and timely interest to report at this time. Work on animals has proved that both bovine and human fibrinogen may be used to good advantage as a bridge for tissue regeneration. The present case report presents the successful use of this substance in the treatment of a human patient.

REPORT OF CASE

History—P. B., a man aged 27, was injured by a high explosive fragment on Nov. 19, 1942, sustaining a laceration of the right thigh. He developed a foot drop with paresthesias over the outer aspect of the thigh and foot. A month later he complained of a severe burning pain in the foot. X-ray examination revealed a foreign metallic body in the soft tissues at the middle third of the thigh. On March 23, 1943, a small

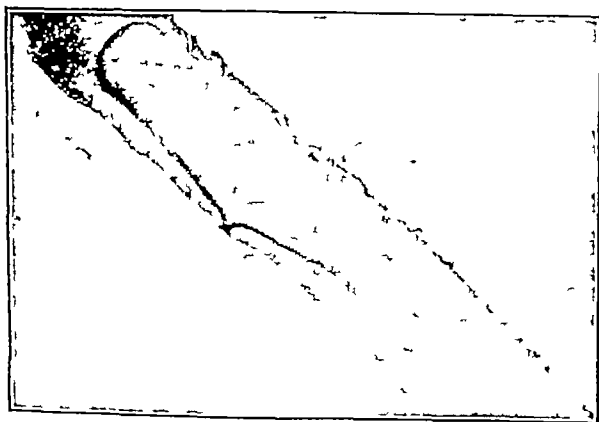


Fig. 1—Microscopic section ($\times 150$) taken through the fibrinogen after being used in the body for over four weeks. There is very little inflammatory reaction and no evidence of absorption of the fibrinogen.

piece of shell fragment measuring 1.0 by 0.7 cm. was removed from the sciatic nerve and because of the denuded sheath human fibrinogen film was applied. (Fibrinogen was supplied to Comdr. R. R. Mazet (VC) USNR, by the Physiologic

Laboratory, Harvard University.) The film of fibrinogen was wrapped round the nerve and six weeks later the operative site was opened and the film removed. At this time healthy nerve tissue was observed with an excellent healing process in progress. The pain in the foot now had subsided.

Pathologic Examination—The first specimen received in the laboratory (March 23, 1943) consisted of a piece of metal measuring 1.5 by 0.7 cm. Also present were several irregular

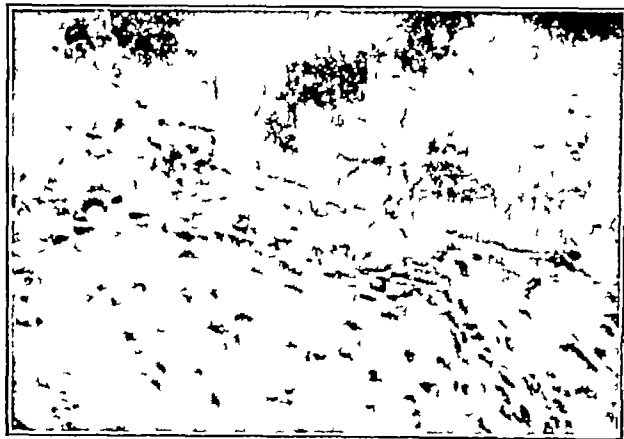


Fig. 2—Section ($\times 500$) taken through the nerve sheath with attached fibrinogen on the surface. Note the glassy homogeneous structure of the fibrinogen with no apparent irritation. The nerve sheath shows a normal growth. Note the absence of any foreign body reaction in the tissue.

small fragments of gray tissue said to be removed from the sheath of the sciatic nerve.

On microscopic examination the fragments were seen to consist of dense fibrous connective tissue in which were large collections of amorphous hyaline refractile granular pigment. These pigment granules were surrounded by whorls of hyperplastic fibrocytes and lymphocytes and occasional giant cells. The adjacent muscle fibers did not appear to be involved in the process.

The diagnosis was granulation tissue, nerve sheath foreign body reaction (high explosive fragment).

The pathologic report on the second operation (April 24) was as follows:

Gross—The submitted specimen consisted of a small pearly white glistening fragment of tissue removed from a nerve sheath, measuring 1 by 0.5 mm, a small mass of muscle measuring 1 by 0.8 cm, and some thin sheets of fibrinogen measuring 3 by 1.5 cm. These were sectioned for microscopic study.

Microscopic—The microscopic sections taken from the fibrinogen showed glassy amorphous structure with a pronounced acidophilic staining reaction. There was very little in the way of evidence which would suggest an irritation reaction from this substance. The nerve sheath showed some clearcut fibrinogen on the surface with a few round cells and fibroblasts in the sheath but very few neutrophilic polymorphonuclear cells or other indications of irritation.

The diagnosis was fibrinogen nerve sheath fragment.

COMMENT

From the description it may be said that the fibrinogen placed around the sciatic nerve on March 23 gave little evidence of tissue irritation. A small section of nerve sheath revealed evidence of growth of a rather normal nature. There was no evidence of any foreign body reaction in the usual sense of the word, and the fibrinogen showed little in the way of absorption. There was no evidence of inflammatory cells in the fibrinogen.

CONCLUSIONS

The application of this substance opens up many new possible uses in reconstructive surgery especially in neurosurgery and tendon repair work. The microscopic sections of the nerve sheath and fibrinogen after removal show the lack of irritation or foreign body reaction yet healing has gone on normally. This procedure may be adapted to meet other needs in reconstructive surgery.

Special Article**HANDBOOK OF NUTRITION: XXIV****NUTRITION IN PREVENTIVE MEDICINE**

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These special articles on foods and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—Ed

The prevention of malnutrition and the deficiency diseases is probably the greatest and most complex problem in public health that this country has ever had. The exact extent of physical disability, economic loss and disease directly or indirectly related to nutrition are unknown, and yet there is every indication that malnutrition is very widespread. Some physicians who do not see many cases of advanced deficiency disease feel that the importance of nutrition is being overemphasized. However, in every clinic in which close observations are made and the more refined methods of diagnosis used, many unsuspected cases of malnutrition are recognized, and every study reveals the importance of mild degrees of deficiency in producing symptoms the cause of which was hitherto unrecognized. Furthermore, it is significant that almost all practicing physicians are prescribing vitamin preparations for more and more of their patients.

Even before our food supply was disturbed by the conditions incident to war, a number of surveys had all shown that a large part of our population was eating foods which failed to provide the essentials in amounts recommended for optimum nutrition. For example, a survey of the diets of more than a thousand workers in a large aircraft factory¹ revealed that more than four fifths of the diets studied fell below the amounts of certain nutrients recommended by the Food and Nutrition Board of the National Research Council.² Nutritionists who have watched workers select their lunches in cafeteria lines report that not more than half of them choose good lunches even when foods needed to provide good lunches are on the counters. It was also observed that women usually made poorer choices than men. The method of food preparation also greatly affects its food value. In a study of food as it was served³ it was shown that as much as 90 per cent of the thiamine (B_1) present in the fresh raw food was lost before the food was eaten. Keeping food hot for long periods of time is really overcooking it, and the vitamins destroyed by heat and oxidation are thus lost. The hot lunch prepared and kept hot for hours before consumption may not be as satisfactory nutritionally as a cold one.

The effect of such inadequate diets on the ability of the civilian worker to do his part in the war effort must be of serious concern to us at this time. As a nation we are not as well fed as we once believed. Physicians

and health officers must recognize that here is a whole new sphere of responsibility in the field of preventive medicine as great as or greater than the field of sanitation or control of communicable diseases.

The growing recognition of the importance of nutrition in health has gone hand in hand with the development of the science of nutrition. Most of what may be called the modern knowledge of nutrition has developed during the present century and much of it since World War I. The discovery of new vitamins, the recognition of the great physiologic importance of various mineral salts and better methods of diagnosis have made the entire world increasingly aware of the enormous amount of ill health, poor development, disease and disability due either directly or indirectly to malnutrition. An indication of the extent of the problem is given just by a survey of the fragmentary reports in the medical literature on the prevalence of the vitamin deficiency diseases.

The principal dietary deficiency diseases are nutritional edema, vitamin A deficiency, vitamin D deficiency, vitamin B_1 (thiamine) deficiency, nicotinic acid deficiency (pellagra), riboflavin deficiency (ariboflavinosis), vitamin C deficiency (scurvy) and vitamin K deficiency. These diseases occur to some extent throughout the world, although there are frequently wide variations in geographic distribution.

Although reports in many instances indicate an extensive occurrence of deficiency disease, they most probably represent only a small proportion of the cases actually occurring in the world.

NUTRITIONAL EDEMA

Nutritional edema is an invariable accompaniment of famine and rapidly disappears when the patient is given enough food of good quality. Together with the prolonged undernutrition a deficiency of protein appears to be the most important factor in the production of this syndrome, although it is recognized that strenuous exercise, exposure to cold and probably other influences are contributory.

In mild cases the edema may be confined to the lower limbs, but when it is more severe it extends to all parts of the body. It is accompanied by emaciation, muscular weakness, depression, anemia and very frequently gastrointestinal disturbances. The swollen extremities are cold and painful when touched, the pulse is slow and the blood pressure is low.

This disease is very common in prison camps and during periods of famine. It has been especially prevalent in India and in China. During the latter years of the first world war it reached epidemic proportions among the poorer classes of the civilian populations of the central European countries. In Bohemia alone 22,842 cases were listed. In the Russian famine of 1921-1922 every single surviving inhabitant of certain towns was affected. During the present nutritional crisis in Europe and in China we may be certain that the incidence of nutritional edema is extremely high although no accurate figures are as yet available.

VITAMIN A

Vitamin A deficiency is manifested in human beings by lesions found chiefly in the epithelial structures. The most readily recognized symptoms are those of the severe deficiency states. Xerophthalmia is associated with atrophy of the paraocular glands, hyperkeratosis of the conjunctiva and finally involvement of the cornea leading to softening or keratomalacia and blindness.

¹ Wiehl, Dorothy G. Diets of a Group of Aircraft Workers in Southern California, Milbank Mem. Fund Quart. **20**: 329, 1942.
² Recommended Dietary Allowances, National Research Council, Reprint and Circular Series No. 115, January 1943.
³ Goodhart, Robert. Dietary Conditions in Industry, J. A. M. A. **121**: 93 (Jan. 9) 1943.

Nyctalopia, or night blindness, is due to a functional failure of the retina in the proper regeneration of visual purple. The characteristic skin lesions were first recognized in Chinese soldiers in 1931.⁴ The lesions consist of epidermal hyperplasia and glandular atrophy and are represented by papular eruptions around the pilosebaceous follicles. Unlike the ocular manifestations, cutaneous eruptions occur in persons between 16 and 30 years of age and not in infants. It is common among men, and 90 per cent of those showing the dermatosis have obvious ocular manifestations of vitamin A deficiency.⁵

The symptoms of milder deficiency states are more difficult to detect. Early stages of conjunctival xerosis occur which may be discovered only by biomicroscopic examination.⁶ Incipient night blindness may be demonstrable only by careful studies of dark adaptation for which a variety of photometric instruments and techniques have been introduced. Mild dermatoses resembling the

Xerophthalmia and nyctalopia have been reported from almost every part of the world. In most countries it is infrequent except under unusual circumstances. It is prevalent, however, in India,¹³ China,¹⁴ the Dutch East Indies,¹⁵ other Asiatic areas,¹⁶ British Guiana,¹⁷ and sections of Africa.¹⁸ A study in South India¹⁹ in 1937 found as many as 15 per cent of 4,000 school children showing xerophthalmia and keratomalacia. In Bengal²⁰ xerophthalmia and nyctalopia were found in 9 per cent of 2,000 persons. In Tientsin, China,²¹ a survey of school children uncovered the presence of xerophthalmia in 83 per cent of certain groups. Five per cent of children admitted to a Batavia hospital²² were xerophthalmic, and in Groot-Atjeh²³ it was found to be "widespread." In Ceylon²⁴ 65 per cent of the blindness was attributable to xerophthalmia, the latter being noted as "common." Of 500,000 persons in Java²⁵ about 1 per cent of blindness was found, and here too xerophthalmia was the chief cause. In

TABLE 1—Reports of Occurrence of Nutritional Edema

Area	Year	Incidence or Number of Cases Reported	Comment	References
United States (South)	1942	15% of hospital patients		The Food and Nutrition of Industrial Workers in War time Nat Res Council Reprint and Circular Series No 110 April 1942
United States (Tennessee)	1941	Relatively small number	900 people studied	Youmans Am J Pub Health 31 704 1941
United States	1936	41 cases	9 years observation	Dodd and Minot J Pediat 8:442 1936
United States	1936	Not now common	Possibly increased during first years of depression	McLester J A M A 106:1865 1936
India (Rangoon)	1934	Increasing	With increasing trade depression	Kundu Indian M Gaz 69 430 1934
China	1943	130 children 14%	Of 903 patients admitted to hospital	Chen Am J Dis Child 63 552 1942
China (Manchuria)	1937	21 cases		Dol J Orient Med 27 115 1937
Spain	1942	12%	Of 270 persons	Robinson Janney and Grande J Nutrition 24:557 1942
Spain	1940	One of 5 main deficiency diseases	3116 people studied 64% of women and 36% of men had a deficiency disease	Jimenez Garcia and Grande Covian Rev clin española 1 41 313 318 323 1940
Netherlands East Indies	1940	Cases reported	Due to failure of harvests of 1937 and 1938 April to October 1937	Streef Streef Spann and Ismangil Geneesk tijdschr v Nederlandsch Ind 80 990 1940
East Africa (Kenya)	1938	12 cases		Bell East African M J 14:327 1938
Egypt	1938	18 infants		Shukry Mahdi and El Gholmy Arch Dis Child 13:254 1938
Uganda	1939	Considerable in prisons up to about 1934		
Northern Rhodesia	1939	Reported		
British Honduras	1939	Reported		
Fiji	1939	Reported		
Sierra Leone	1939	Extensive in prisons barracks and asylums		
Bechuanaland	1939	Frequent		
Leeward Islands (Antigua)		Not uncommon		

Report of Committee on Nutrition for British Colonial Empire 1939

more florid eruptions of advanced vitamin A deficiency and responding to treatment with vitamin A preparations have been described.⁷ Levels of carotene and vitamin A in the blood and tissues have been determined in an effort to use them as criteria of deficiency states, either manifest or subclinical. Vitamin A has also been given a role in disorders of the respiratory tract,⁸ genitourinary tract,⁹ central nervous system,¹⁰ teeth,¹¹ thyroid gland¹² and other organ systems and structures.

Sumatra²⁶ 20 to 61 per cent of 3,684 children showed evidences of xerophthalmia, and in 1939 1 per cent of 8,677 children examined in the Philippine Islands²⁷ had this disease. In 1937 keratomalacia, xerophthal-

13 Kirwan E O Sen K and Biswas R B Indian J M Research 29 119 (Jan) 1941 Eddy and Dalldorf²⁸ and references given in footnotes 19 20 and 21

14 References given in footnotes 13 21 and 28

15 Hadikoesomo G A Geneesk tijdschr v Nederl Indie 78 935 (April 19) 1938 Ceylon Sessional Papers II February 1927 and references given in footnotes 22 23 24 25 26 28 49 and 62

16 J Malaya Branch Brit M A 2 113 1938 Tupas A V and Pecache L J Philippine Islands M A 18 147 (March) 1938 and references given in footnotes 27 and 28

17 Report Director Medical Sources of British Guiana 1938 (1940) p 61

18 McKenzie²⁹ Loewenthal³⁰

19 League of Nations Report on Health Organization in British India Geneva 1937 p 51

20 Biswas R B Indian M Gaz 76 747 (Dec) 1941

21 Nicholls L Indian M Gaz 68 681 (Dec) 1933 69 241 (May) 1934

22 DeHaas and others Geneesk tijdschr v Nederl Indie 80 928 1940

23 Gomperts C E Geneesk tijdschr v Nederl Indie 80 1192 (May 7) 1940

24 League of Nations Health Organization Report Geneva 1937

25 Tjissen J Geneesk tijdschr v Nederl Indie 79 79 (Jan 10) 1939

26 Maas Geneesk tijdschr v Nederl Indie 79 1512 (June 13) 1939

27 Ubaldo A R and de Campo G J Philippine Islands M A 19 483 (Aug) 1939

4 Frazier C N and Hu Chuan Kuei Cutaneous Lesions Associated with a Deficiency in Vitamin A in Man Arch. Int Med 48: 507 (Sept.) 1931

5 Frazier C N and Hu Chuan Kuei Nature and Distribution According to Age of Cutaneous Manifestations of Vitamin A Deficiency Arch. Dermat. & Syph 33 825 (May) 1936

6 Wiehl Dorothy G and Kruse H D Milbank Mem. Fund Quart 10 241 1941

7 Youmans J B The Present Status of Vitamin Deficiencies in Practice J A M A 108 15 (Jan 2) 1937

8 Blackfan K D and Wolbach S B J Pediat 3 679 1933

9 Shibley G S and Spies T D The Effect of Vitamin A on the Common Cold J A M A 103 2021 (Dec 29) 1934 Cameron H C J Am Dietet A 11 189 1935

9 Higgins C C Production and Solution of Urinary Calculi J A M A 104:1296 (April 13) 1935

10 Mellanby Edward Brain 58:141 1935

11 Mellanby May Physiol Rev 8 545 1928 Bessey O H and Wolbach S B Vitamin A J A M A 110 20/2 (June 18) 1938

12 Wendt, H Munchen med Wchnschr 82 1679 1935

TABLE 2—Reports of Occurrence of Vitamin A Deficiency

Country and Year	Deficiency Symptom	Incidence		Groups Studied	References
		NORTH AND SOUTH AMERICA			
New Foundland, Labrador 1939 1940	Xerophthalmia, 0, dark adaptation, 9% nyctalopia, 3%	"Probably more extensive use of controlled procedures will show that even very mild vitamin A deficiency ordinarily is rare in occidental population"		353 adults	Steven and Wald ⁴⁰
Canada (Edmonton) 1939	Dark adaptation, 24%	Evidence of vitamin A deficiency		1,000 university students	Pett ⁵³
United States (Kansas) 1942	Clinical evidence	None		1,205 workmen	Schnedorf, Weber and Glendenning ⁴⁴
United States (Chicago) 1942	Dark adaptation, blood levels	"Mild deficiency is rare or not detectable by these methods"		Children	Oldham, Roberts, MacLennan and Schiutz ⁵³
United States (New York City) 1941	Blomicroscopic slit lamp examination	86.6% showed evidence of vitamin A deficiency		Poor school children	Wiehl and Kruse ⁶
United States (California) to 1942	Clinical deficiencies	None		385 hospital patients	Krupp ⁴⁴
United States (general) to 1941	Xerophthalmia	One case in several years reported in literature			Youmans and Patton ⁴⁴
United States (general) to 1941	Nyctalopia, dermal toxic anatomic changes, 'mild deficiency'	Not uncommon			Youmans and Patton ⁴⁴
United States (North Carolina) 1940 1941	Clinical deficiencies Blood level at lower limits	None "Common"		Mill village community of 400	Millam ⁴⁴
United States (Tennessee) 1941	Dark adaptation	"High incidence" of vitamin A deficiency		900 rural people	Youmans, footnote 52, first reference
United States (Florida) 1941	Follicular conjunctivitis	21.7% had vitamin A deficiency		1,041 school children	Sandels, Cate, Wilkinson and Graves ⁵⁵
United States (New York City) 1940	Dark adaptation	One case		144 children	Lewis and Haig ⁴⁴
United States (Tennessee) 1938	Dark adaptation	50% showed vitamin A deficiency		54 adults in Nashville	Corlette, Youmans, Frank and Corlette ⁵³
United States to 1937	Dark adaptation	30% showed vitamin A deficiency		Medical students	Jeghers ⁵²
United States to 1937	Dark adaptation	50% showed vitamin A deficiency		Chile patients	Youmans, footnote 52, second reference
United States (Iowa) to 1936	Dark adaptation	26 to 70% showed vitamin A deficiency		Children	Jeans, Blanchard and Satterthwaite ⁵⁴
Brazil 1932 1933	Nyctalopia	"A number of cases were observed during a period of drought"		General population	Cavalcanti ⁴⁷
British Guiana 1938	Xerophthalmia, nyctalopia	"Common"			Footnote 17
Yucatan and Labrador to 1937	Xerophthalmia, nyctalopia	"Common"		General population	Eddy and Dalldorf ⁴⁵
United States (general) to 1934	Xerophthalmia	"Rare"			Thorson, J. A. M. A. 103:1438 (Nov 10) 1934
Trinidad 1941	Xerophthalmia nyctalopia	"Rare"			Mettivier ⁴⁸
EUROPE					
England 1940	Hyperkeratosis	5% had this evidence of vitamin A deficiency		General population	Pemberton ⁵⁰
England (Newcastle upon Tyne) 1938-1939	Clinical deficiencies	None		138 (poor income group) children	Brewis and others ⁵⁴
France (Marseilles) 1941	Clinical deficiencies 'Laboratory data indicating mild deficiencies'	None Widespread		Several hundred of school children and general population	Youmans ⁵⁶
France 1940	Total deficiency, partial deficiency (Dry skin, digestive disturbance, nyctalopia, irritability)	Rare Prevalent		Adults and children	Chevallier ⁵⁴
France to 1939	Xerophthalmia	Only 7 cases described to date		General literature	Clement and Delon ⁵⁵
France (Paris) 1940-1941	Xerophthalmia	Same as before (?)		In hospitals	Minaud ⁵⁴
France 1938	Dark adaptation	"Relatively frequently"		210 school children	Caussade and others ⁵⁷
Spain (Madrid) 1941	Nyctalopia, 8% dermatosis, 13% blood level at or below borderline 33%	Evidences of vitamin A deficiency		106 families or 561 persons	Robinson, Janney and Grande-Covian ⁵⁸
Italy (Turin) 1939	Nyctalopia	45% showed this vitamin A deficiency		500 school children	Mathis ⁵⁹
Italy (Venice) 1939	Low blood levels, nyctalopia	Frequent incidence of these vitamin A deficiencies			Brettl and Tria ⁴⁰
Italy (Venice) 1939	Nyctalopia	"Common" occurrence of this vitamin A deficiency		Children	Tria ⁴⁰
Czechoslovakia (Prague) 1938	Clinical deficiencies	"No serious deficiency (vitamin A) but a slight lack of the vitamin was indicated by dry affections of the skin and nyctalopia"		Replies to 1,218 questionnaires sent to health officers	Charvat ⁴²
Sweden (Djuroholm) 1939	Dark adaptation	28% showed this vitamin A deficiency		67 school children	Abramson and Örgaard ⁵⁸
Finland (Helsinki) 1940	Dark adaptation	29% showed this vitamin A deficiency		71 persons	Nylund ⁵⁹

TABLE 2—*Reports of Occurrence of Vitamin A Deficiency—Continued*

Country and Year	Deficiency Symptom	Incidence	Groups Studied	References
EUROPE—Continued				
Finland (Helsinki) 1938-1940	Dark adaptation	10% showed this vitamin A deficiency	1,377 persons	Simola and Saksela ⁵⁹
Denmark (Copenhagen) 1937	Dark adaptation	2.4% uncommon	332 hospital patients	Mowinkel Reistrup and Reiter ⁵⁸
Denmark (Copenhagen) 1935	Dark adaptation	71% showed this vitamin A deficiency	65 children	Frandsen ⁵⁰
Germany (Posen) 1940	Dark adaptation	None	173 persons	Widenbauer ⁵⁰
Germany (Halle) 1939	Nyctalopia	17% showed this vitamin A deficiency	218 persons	von Drigalski and others ⁴⁸
Sweden Norway Finland Czechoslovakia, Yugoslavia 1939	Nyctalopia dermatosis	'Frequently reported'	Rural population	Bull Health Organ ⁴¹
Egypt (Cairo) 1938	Xerosis of conjunctiva and cornea nyctalopia	0.4% 0%	Patients in general ophthalmic hospital	Giza Memorial ⁵¹
Tanganyika Territory 1939	Dark adaptation nyctalopia 10%	93% showed this vitamin A deficiency	94 native patients and convicts school boys	McKenzie ⁵⁰
Uganda (Teso) 1935	Xerophthalmia, phrynodermia	300 cases 80% in children 87% in adults	1,112 persons	Loewenthal ⁵⁰
Union of South Africa 1942	Keratomalacia Bitôt's spots Phrynodermia	None 'Considerable number'	841 children	Brock and Latsky ⁵⁸
Falkland Islands 1937	Xerophthalmia	None		Annual report ⁵⁸
ASIA				
India (Calcutta) 1941	Dark adaptation nyctalopia	6% of these vitamin A deficiencies	138 persons	Roy and Bauergee ⁶¹
India (Calcutta) 1941	Lesions from nyctalopia to xerophthalmia	8%	14,608 persons in eye infirmary	Kirwan, Sen and Biswas ¹⁸
India (Bengal) 1941	Xerophthalmia nyctalopia	9%	2,000 persons	Biswas ⁵⁰
India (Bengal) 1941	Dark adaptation	"27% were below standard"	391 school boys	Basu and De ⁶¹
India (general) to 1937	Xerophthalmia nyctalopia	Common	General population	Eddy and Dalldorf ⁴⁵
India (Kashmir) 1939	Phrynodermia	10% showed this vitamin A deficiency	Children	Nicholls and Nimalasuriya ⁴⁹
South India 1937	Xerophthalmia keratomalacia	Up to 15%	4,000 school children	League of Nations ¹⁹
China to 1937	Xerophthalmia nyctalopia	Common	General population	Eddy and Dalldorf ⁴⁵
China (Tientsin) 1929-1930	Xerophthalmia	Eye clinic patients 6% charity boarding schools 83% poor vernacular schools 29% upper class schools 3% mental asylums 44% mental asylums (Europe) 2%		Nicholls ⁵¹
Malaya (Singapore) 1938	Xerophthalmia	Not uncommon	Children	Malaya Journal ¹⁰
Dutch East Indies (Batavia) 1935-1940	Xerophthalmia	5%	Children admitted to hospital	De Haas and others ⁵²
Dutch East Indies (Groot-Atjeh) 1937	Xerophthalmia	Widespread		Gomperts ⁵²
Dutch East Indies (Batavia) 1937-1939	Dark adaptation	60 to 80% showed this vitamin A deficiency	430 persons	Gorter ⁶²
Dutch East Indies 1938	Xerophthalmia	1.3%	8,000 children under 15 years	Hadikoesoemo ¹⁵
Dutch East Indies 1937	Xerophthalmia keratomalacia nyctalopia	Common		League of Nations Conference ²⁸
China 1937	Xerophthalmia keratomalacia	'Common'		
British Solomon Islands 1937	As above	Common		
New Hebrides (Condominium) 1937	As above	Unknown		
Tonga Islands 1937	As above	Exists		
Fiji Islands 1937	As above	'Almost complete absence'		
Dutch East Indies (W. Java) 1939	Xerophthalmia	About 1% blindness of which xerophthalmia is chief cause	500,000 persons	Tijssen ⁵⁵
Dutch East Indies (Sumatra) 1939	Xerophthalmia (mild and severe)	38% to 2 years 51-61%, 2-15 years 20% 15 years	3,684 children	Maas ⁵⁰
Ceylon (Southern) 1939	Phrynodermia Bitôt's spots	21% 5.6%	976 children 1,497 children	Nicholls and Nimalasuriya ⁴⁹
Ceylon (Northern) Ceylon 1937	Bitôt's spots Xerophthalmia	Less than above 65% of blindness caused by xerophthalmia		Nicholls and Nimalasuriya ⁴⁹
Ceylon 1937	Xerophthalmia	Common	Prisoners	Ceylon Sessional Papers ¹⁵
Philippine Islands 1939	Xerophthalmia	1%	8,677 persons	Ubaldo and de Campo ⁵⁷
Philippine Islands 1937-1937	Keratomalacia	47 cases noted	Pediatric service of General Hospital in children—5 yrs	Tupas and Pecache ¹⁶

nia and nyctalopia were reported as "common" in the British Solomon Islands,²⁸ as "unknown" in the New Hebrides Condominium,²⁸ as "existing" in the Tonga Islands²⁸ and "almost completely absent" in the Fiji Islands²⁸

Reports²⁹ from Tanganyika Territory in 1939 showed 10 per cent of the school boys to be suffering from night blindness. In Teso, Uganda,³⁰ a 30 per cent incidence of xerophthalmia was found among children in a group of 1,112 persons of all ages. In Cairo, Egypt,³¹ only 0.2 per cent of persons attending a general ophthalmologic hospital were nyctalopic, and 0.4 per cent showed xerosis of the conjunctiva and cornea. No cases were found in a thorough 1942 survey of 841 children in the Union of South Africa³² and none were noted in the Falkland Islands³³

In Europe, xerophthalmia is uncommon.³⁴ Up to 1939 only 7 cases had been reported in the French medical literature,³⁵ and reports up to 1941³⁶ failed to add any further cases. Under unusual circumstances the disease appeared in epidemic form, as in Denmark³⁷ during World War I, when dairy products were replaced in the diet by fats lacking in vitamin A. A recent survey of 106 families including 561 persons in Madrid, Spain,³⁸ uncovered only 2 per cent with nyctalopia. In Italy, however, the incidence is reported to be much higher. In Turin in 1939³⁹ 45 per cent of 500 school children had night blindness, and it was also found to be common in Venice.⁴⁰ A study of rural populations⁴¹ revealed that nyctalopia and dermatosis were "frequently reported" from Sweden, Norway, Finland, Czechoslovakia and Yugoslavia. A year earlier, in 1938, a report⁴² from Prague based on a questionnaire survey found no serious deficiencies, although dermatoses and nyctalopia were noted. In Halle, Germany,⁴³ in 1939 17 per cent of 218 persons were found to be night blind.

In the United States⁴ xerophthalmia, keratomalacia and nyctalopia due to vitamin A deficiency are rarities. In Yucatan⁴⁵ and British Guiana⁴⁷ they are reported as "common." A recent study in Newfoundland and Labrador⁴⁶ uncovered no cases of xerophthalmia and only 3 per cent of night blindness among 353 adults. In Brazil⁴⁷ a number of cases of nyctalopia were noted

during a period of drought. The conditions were reported from Trinidad⁴⁸ as of "rare" occurrence.

The severe dermatoses of vitamin A deficiency are found in the same geographic distribution as the advanced ocular manifestations. Reports from China⁴⁹ and other countries⁴⁰ indicate the incidence of this symptom to be as high as or higher than that of ocular symptoms. The occurrence of mild dermatoses as evidence of low grade vitamin A deficiency has been reported widely. Five per cent of a general population group in England⁵⁰ in 1940 showed such a hyperkeratosis, and 13 per cent of a similar group in Madrid, Spain,³⁸ in 1941 had such lesions. It has been frequently reported from the Scandinavian countries,⁴¹ central Europe,⁵¹ Asia⁴⁰ and South Africa³²

The failure of the eye to adapt properly to darkness has been reported as a mild vitamin A deficiency symptom and has been subjected to refined biophotometric measurement. Reports of such studies have been at variance as the result of the multitude of techniques and instruments employed, the failure to consider other etiologic factors of dysadaptation and the unavailability of universally accepted criteria of subclinical vitamin A deficiency disease to serve as standards.

A high incidence of dark dysadaptation has been reported widely in the United States⁵² and throughout the world.⁵³ Among 120 Iowa school children⁵⁴ almost 20 per cent showed abnormal adaptation in the winter and 5 per cent in the fall. Of 54 adults studied in Tennessee⁵⁵ 27 had subnormal abilities to adapt to darkness. In Copenhagen⁵⁶ 46 of 65 healthy school children showed this impairment. Similar findings have been reported from France,⁵⁷ Sweden,⁵⁸ Finland,⁵⁰ Germany,⁶⁰ India,⁶¹ Africa²⁹ and the Dutch East Indies.⁶² However, reports indicating a very low incidence of dark dysadaptation are also available. A study of Chicago children⁶³ in 1942, augmented by determinations of vitamin A blood levels, led to the conclusion that "mild vitamin A deficiency is rare or not detectable by these methods." Only 1 case of dark dysadaptation⁶⁴ was found among 144 New York City school children.

Very mild degrees of conjunctival xerosis recently have been attributed to a deficiency of vitamin A. By means of a binocular slit lamp, 86.6 per cent⁶ of poor school children in New York City were found to exhibit such lesions. A follicular conjunctivitis also

28 League of Nations Health Organ, Intercon. Conference of Far Eastern Countries on Rural Hygiene, Geneva, 1937.

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30 Loewenthal, L. J. A. J. Trop. Med. & Parasitol. 29: 349, 1935.

31 8th Annual Report of the Giza Memorial Ophthalmic Lab., 1938, p. 105.

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33 Annual M. & Saint Report, 1937, p. 24.

34 Brewis and others. Ann. Rep. M. O. H. City & County of New Castle upon Tyne for 1939, appendix A, p. 12.

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38 Widmark, E. Lancet 1: 1206, 1924.

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41 Bretti and Tria. Ric. sc. prog. & C. 10: 1107, 1939. Tria. Quad. nutrizione 6: 319, 1939.

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44 von Drigalski and others. Klin. Wchnschr. 18: 875, 1939.

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49 Cavalerenti, J. Arq. braz. d. neunt. & psiq., 1934, p. 7.

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50 Pemberton, J. Lancet 1: 871 (May 11) 1940.

51 Charvat⁴² Bull. Health Organ⁴¹.

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53 Jeggors, Harold. The Degree and Prevalence of Vitamin A Deficiency in Adults. ibid. 109: 756 (Sept. 4) 1937. Corlette, Youmans, Frank and Corlette⁵⁵. Jeans and Zentmire⁵⁴.

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55 Basu and De⁶¹ and the references given in footnotes 29, 43, 46, 56, 57, 58, 59, 60, 61 and 62.

56 Jeans, P. C., Blanchard, Evelyn L., and Satterthwaite, Franklin E. Dark Adaptation and Vitamin A. J. Pediat. 18: 170 (Feb.) 1941.

57 Corlette, M. B., Youmans, J. B., Frank, Helen and Corlette, Mildred G. Am. J. M. Sc. 195: 54 (Jan.) 1938.

58 Frandsen, H. Nutrition Abstr. 4: 621, 1935.

59 Caussade, L., and others. Rev. franc. pediat. 14: 209, 1938.

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61 Nylund, C. E. Nord. med. (Finska Läk. sällsk. handl.) 9: 659 (March 1) 1941. Simola, P. E., and Saksela, N., ibid. 9: 275 (Jan. 25) 1941.

62 Widenbauer, F. Ernährung 7: 97, 1942. von Drigalski and others⁴³.

63 Roy and Bauergee. Ann. Biochem. Exper. Med. 1: 127, 1941.

64 Basu, N. M., and De, N. K. Indian J. M. Research 29: 591 (July) 1941.

62 Gorter, F. J. Geneesk. tijdschr. v. Nederl. Indie 79: 1181, 1939.

63 Oldham, Helen, Roberts, Lydia J., MacLennan, Kathryn and Schlutz, F. W. J. Pediat. 90: 740 (June) 1942.

64 Lewis, J. M., and Haig, C. J. Pediat. 16: 285 (March) 1940.

thought to be etiologically related to vitamin A deficiency was present in 21.7 per cent of 1,041 Florida⁶⁵ school children

VITAMIN D DEFICIENCY

Nutritional diseases due to deficiencies of vitamin D and calcium may be divided into three important categories, namely rickets, osteomalacia and tetany. The three conditions, though usually separated for descriptive purposes, have ramifications that make it difficult to separate them completely.

and severity in various localities. The greatest local prevalences were found in larger cities where poor housing, inadequate diets and limited exposure to sunshine exists. The disease has been reported to be, as a rule, most prevalent in the north temperate zone and least prevalent in the tropical and subtropical areas.

An incidence of 75 to 97.6 per cent of children having symptoms of rickets has been reported in certain areas of the United States,⁶⁷ in Germany,⁶⁸ Italy,⁶⁹ Sweden,⁷⁰ the British Isles⁷¹ and Egypt,⁷² in from 25 to 75 per

TABLE 3—Occurrence of Rickets

Area Reported	Year	Number Examined	Number or Percentage of Cases Found	References
		Incidence of 75 to 97.6%		
Portland Ore	1936	1 000	97.6%	Moore and Dennis ⁶⁹
Hamburg, Germany			95%	
Riga			83%	
Boston			70%	
Dresden, Germany			80%	
Durham, England	1936	1 087 boys	81.8%	McIntosh ⁷¹
Durham, England	1936	1 122 girls	76%	
Lund, Sweden	1934	141	108 or 76%	Siwe ⁷⁰
Portland Ore., and San Diego, Calif.	1937	913	90%	Moore and others ⁶⁷
Frankfurt, Germany	1939	599	80.8%	Graser ⁶⁸
Reich, Germany	Winter of 1940		75%	Rott ⁶⁸
Germany	Winter of 1939	599	70%	Graser ⁶⁸
		Incidence of 25 to 74.9%		
Egypt	1936		50%	Sabri ⁷²
Egypt	1938	240	104 or 43.3%	Huldschinsky ⁷³
Lausanne, Switzerland	1937	438	271 or 61.3%	Messeri ⁷⁴
Kings Lynn, England	1935	651 boys	89.1%	McIntosh ⁷¹
Buenos Aires, Argentina	1932	1 000	350 or 35.0%	Sujoy ⁷⁵
Buenos Aires, Argentina	1934	408	32%	Garrahan ⁷⁶
Buenos Aires, Argentina	1939	188	30.8%	Giordano ⁷⁶
Nomad Laplanders	1939	140	44 or 31.4%	Gezillum ⁷⁶
Cantons of Colmar and Andolsheim	1930	102	45%	Zillhardt ⁷⁷
Baltimore	1943	230	46.5%	Follis, Jackson, Elliot and Park ⁷⁴
Norway (Inland)	Not given	917	Under 1 yr 30% 1 to 3 yrs 40%	Rustung ⁷⁸
City of Freiberg, Germany	1936	1 431	47%	Viethen ⁷⁹
Adjoining rural districts	1936		70%	
Sudeteland	1940		30 to 70%	Hofmeier ⁷⁹
Reich, Germany	Summer of 1940		50%	Rott ⁶⁸
Germany	June and July 1941	412	42%	Graser ⁶⁸
Aussig, Germany	1933-1939	4 439	2,918 or 65.7%	Reichsgesundtbl. 14:343 1942
		Incidence of 0 to 24.0%		
Hong Kong, China	1939		None	Wellington ⁸⁰
Panama Canal Zone	1933	100	8 or 8%	Elliot and Jackson ⁸¹
Puerto Rico	1933	604	5 or 0.9%	
Palestine	1937	950 sick children	11 or 1.1%	Gruenfelder ⁸²
Palestine	1937	in hospitals		Gruenfelder ⁸²
Uruguay	1937	6 203 outpatients	57 or 0.9%	
		Children hospitalized in early infancy	15 to 12%	Carran and Bazzano ⁸³
Africa	1939	2 000	4 or 0.2%	Mosel ⁸⁴
France	1936	In schools in cities and villages	4 to 6%	Freyss ⁸⁵
Haiti	1936		Relatively rare	Armand M. Gaz. méd. Paris 43:53 1936
Swedish Laplanders	1936		Practically no rickets	Schwenk E. München med. Wchnschr 83:139 1936
Hamburg, Germany	1929	668	101 or 15.1%	Zell W. Ibid 84:189 1937
Hamburg, Germany	1936	1 245	21.2%	
Italy	1938		0.5 to 1.5%	Petragnane ⁸⁶
Ecuador	1936		Rickets in exceptional cases	Velasco ⁸⁷
Haiti	1936		Relatively rare	Armand ⁸⁸
Honduras	1936		Very rare	Ordóñez Diaz ⁸⁹
Peru	1931	32 000	0.18%	Suarez ⁹⁰
Peru	1934	32 000	0.16%	

Rickets—Neff⁶⁶ defines rickets as a "nutritional and metabolic disease of the first two years of life, the chief characteristic of which is a failure to appropriate or retain calcium in the bones, which become soft and deformed."

The existence of rickets has been demonstrated throughout most of the world, varying in its frequency

cent of children in Switzerland,⁷³ in the United States,⁷⁴ the British Isles⁷¹ and Argentina,⁷⁵ among nomad Laplanders,⁷⁶ in the cantons of Colmar and Andolsheim,⁷⁷ in Norway⁷⁸ and Germany⁷⁹ and from 0 to

⁶⁹ Moore C U and Dennis H G. California & West. Med 44:288 (April) 1936

⁷⁰ Siwe S. Acta paediat 17:1 157 184 1934

⁷¹ McIntosh J W. J State Med 43:187 (April) 1935

⁷² Huldschinsky K. Brit. J Phys Med 1:297 (Sept.) 1938

⁷³ Sabri S. J Egyptian M. A. 18 138 (Feb.) 1935

⁷⁴ Messeri F M. Rev d'hyg 59 640 1937

⁷⁵ Follis R H Jr. Jackson Deborah Eliot Martha M and Park E. A. Prevalence of Rickets in Children Between Two and Fourteen Years of Age. Am J Dis Child 60:1 (July) 1943

⁷⁶ Sujoy E. Semana méd. 40 646 1933

⁷⁷ Garrahan J P and Giordano J J. Ibid 46 460 1939

⁷⁸ Rustung E. Acta paediat. 26 184 1939

⁷⁹ Zell W. Bull. Soc. paediat. Paris 34 373 1936

⁸⁰ Zell W. Arch. f. Kinderh 115 13 1938

⁸¹ Zell W. München. med. Wchnschr 84 1895 1937

⁸² Rott. Graser⁶⁸

⁶⁵ Sandels Margaret R. Cate Helen D. Wilkinson Kathleen P. and Graves L. J. Follicular Conjunctivitis in School Children as an Expression of Vitamin A Deficiency. Amer J Dis Child 62 101 (July) 1941

⁶⁶ Neff Frank C. Rickets in Tice's Practice of Medicine 9, Sec VIII chapter VIII Hagerstown Md W F Prior Company

⁶⁷ Moore C U Brodie Jessie L. Thornton A J. Lesem A M and Cordua Olive B. Failure of Abundant Sunshine to Protect Against Rickets. Am. J. Dis. Child 54 1227 (Dec.) 1937

⁶⁸ Graser E. Ztschr f. Kinderh 61 520 1939

⁶⁹ Rott H J. Reichsgesundtbl 1940

⁷⁰ Graser E. Klin. Wchnschr 21 82 1942

⁷¹ Moore and Dennis⁶⁹

⁷² Sabri⁷²

25 per cent in localities in China,⁸⁰ the Panama Canal Zone,⁸¹ Puerto Rico,⁸² Palestine,⁸² Uruguay,⁸³ Africa,⁸⁴ France,⁸⁵ Italy,⁸⁶ Ecuador,⁸⁷ Haiti,⁸⁸ Honduras⁸⁹ and in Peru⁹⁰

The disease in itself is rarely fatal, but intercurrent infections may develop that are difficult to control, owing to the low resistance of the individual. The Bureau of the Census⁹¹ for the United States lists rickets as a cause of death in each of nine years from 1933 through 1941 as ranging from 339 to 139. In England and Wales⁹² it was listed as the cause of death for eleven years from 1928 through 1938 as ranging from 493 to 124. There were 554 deaths in Italy in 1937,⁹³ 129 in Colombo, Ceylon, in 1939,⁹⁴ 21 deaths of 57 patients with rickets admitted to all hospitals in the Malaya States in 1938⁹⁵ and 170 deaths of 195 patients with rickets in hospitals in Chile in 1942.⁹⁶

Osteomalacia—This is a nutritional disease of adults resulting from deficiency of vitamin D and the failure of utilization of calcium. It is characterized by pro-

TABLE 4—Deaths from Rickets

Area Reported	Year	Number of Deaths	References
United States	1933	339	U. S. Bureau of the Census ⁹¹
	1934	292	
	1935	261	
	1936	270	
	1937	235	
	1938	244	
	1939	143	
	1940	161	
England and Wales	1941	139	Register General Statistical Review of England and Wales for 1938 ⁹²
	1928	493	
	1929	416	
	1930	316	
	1931	401	
	1932	301	
	1933	213	
	1934	180	
Italy	1935	159	Statistica, 1937 ⁹³
	1936	148	
Malaya States	1937	158	de Pinto ⁹⁴
	1938	124	
Colombo, Ceylon	1939	21 of 57 hospitalized	Straits Settlements report ⁹⁵
Chile	1942	170 of 195 hospitalized	Alimentacion in Chile ⁹⁶

nounced softening of bones, so much so that they become flexible and cause deformities, especially of the limbs, spine, thorax and pelvis. It is attended by the rheumatic type of pain and general weakness. Although it is occasionally seen in men it is most often encountered in women, especially among those who are pregnant.

80 Wellington, A. R. Hong Kong M. & San. Report for Year 1932, p. 60.

81 Elliot, Martha M., and Jackson, Edith B. Bone Development of Infants and Young Children in Puerto Rico, Am. J. Dis. Child 46: 1237 (Dec.) 1933.

82 Gruenfelder, B. M. Rec. 146: 176, 1937.

83 Carran, A., and Bazzano, H. C. Arch. pediat. Uruguay 8: 428, 1937.

84 Niosi, A. Minerva Med. 30: 454, 1939.

85 Treys, M. M. Bull. Soc. pediat., Paris 34: 374, 1936.

86 Petraghane, G. Bul. Off. internat. hyg. 30: 2257, 1938.

87 Velasco, C. Bol. Inst. Intern. Am. Prolec. Infan. 9: 3, 1936.

88 Armand, M. Bol. Inst. Intern. Am. Prolec. Infan. 9: 3, 1936.

89 Ordonezdiaz, P. H. Bol. Inst. Intern. Am. Prolec. Infan. 9: 3, 1936.

90 Suarez, L. A. Bol. Inst. Intern. Am. Prolec. Infan. 9: 3, 1936.

91 Bureau of the Census of the United States.

92 The Register General Statistical Review of England and Wales for the year 1938.

93 Statistica de il cause di morte, 1937.

94 de Pinto, C. E. Report on Vital Statistics, 1939.

95 Ann. Report of Medical Dept. Straits Settlements Federated Malay States and Unfederated Malay States, 1938.

96 La Alimentacion, in Chile, 1942, p. 260.

Although osteomalacia has become an exceptional disorder among peoples living under modern civilizations, there are still large areas where it constitutes a medical problem. It was reported to be widely distributed in India,⁹⁷ in the province of Shansi, China,⁹⁸ in the province of Toyama, Japan,⁹⁹ and in an isolated district of Bosnia,¹⁰⁰ where 3,510 cases were seen in the twelve years previous to 1910. The disease is most frequently found in India among women of the upper and middle classes who practice seclusion or purdah after marriage. It is seldom found among the lower classes who have to work outdoors.

This disease and rickets have the same etiologic factors, viz. vitamin D deficiency and disturbance of calcium metabolism, also no sharp distinction can be drawn between late or adult rickets and osteomalacia. It has been reported¹⁰¹ that among 1,000 children of well-to-do parents whose mothers observe purdah 25 per cent had rickets, whereas among 2,300 children of low caste Hindus only about 5 per cent were affected.

"War Osteopathy," or "Hunger Osteomalacia"—A nutritional disorder which was generally termed "war osteopathy" or "hunger osteomalacia" made its appearance among the peoples of central Europe shortly after World War I. It was common in Austria, Germany and Poland. This disorder was characterized by pains in the back, groins and legs, by a somewhat characteristic gait, by difficulty in climbing stairs and by some tenderness of the bones. The age and sex distribution was peculiar. Beninde¹⁰² stated that there was pronounced susceptibility of adolescents, mainly males, almost no cases occurred between the ages of 20 and 35, whereas the high incidence was in the period from 40 to 60 years, confined almost entirely to women. Hess¹⁰³ states that the condition "developed to a degree and extent such as had never been experienced in the history of medicine. Marked deformities of the spine and the extremities, multiple fractures, and functional disabilities by the thousand, were observed throughout the land." He reasons that from the very close resemblance between this condition and the classic osteomalacia it would seem of advantage to class them as one and the same disorder.

Tetany—This is a syndrome manifested by sharp flexion of the wrists and ankle joints, muscle twitchings, cramps and convulsions. It is due to abnormal calcium and phosphorus metabolism. It may be associated with several conditions, but consideration here is given only to its association with vitamin D deficiency in relation to rickets and osteomalacia. As in rickets, the peak of the incidence of tetany is in late winter and early spring.¹⁰⁴

Tetany has often been noted in cases of rickets and osteomalacia. In one report¹⁰⁵ it was recorded that one fifth of the cases of rickets and one third of their cases of osteomalacia showed signs of tetany. In another report¹⁰⁶ it was stated that 30 of 63 patients with

97 Scott, A. C. Indian J. M. Res. 4: 140, 1916.

98 Maxwell, J. P. China M. J. 37: 625, 1923.

99 Ogata, M. Beitrage z. Geburtsh. u. Gynak. 17: 23, 1911, 18: 8, 1912.

100 Januszewska, G. Wien. klin. therap. Wchnschr. 17: 503, 1910.

101 Hutchison, H. S., and Shah, S. J. Quart. J. Med. 15: 167, 1922.

102 Beninde, M. Ver. a. d. Geb. d. Medizinalverwaltung. 10: 1, 1920.

103 Hess, A. F. Rickets, Osteomalacia and Tetany, Philadelphia, Lea & Febiger, 1929.

104 Kassowitz, M. Praktische Kinderheilkunde, Berlin, Springer, 1910.

105 Frankl-Hochwart, L. Die Tetanie der Erwachsenen, Vienna, Haetder, 1907.

106 Japha, A. Arch. f. Kinderh. 42: 66, 1905.

107 Hutchison, H. S., and Stapleton, G. Brit. J. Dis. Child. 21: 18, 1924.

108 Stapleton, G. Lancet. 1: 1119, 1925.

Rickets had tetany, while in another¹⁰⁰ it was noted that tetany occurred in 338 of 3,510 cases of osteomalacia seen in Bosnia

Tetany in rickets may be the immediate cause of death. This comes about either by the result of heart failure following spastic contraction of the heart muscle or by respiratory failure of cerebral origin. Happily this result is infrequent, as there are many therapeutic measures available for rapidly controlling the convulsive seizures. Some cases, however, resist all measures.

Reports in recent years on incidence of tetany in various localities are limited as a rule to individual case reports. Snelling and Brown¹⁰⁷ reported 32 cases in 1928 and 28 in 1935 at the Hospital for Sick Children in Toronto, Canada. Hennig¹⁰⁸ observed 79 cases of manifest tetany in central Europe from 1933 to 1937.

(To be continued)

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
STATEMENT
AUSTIN E SMITH M.D. Secretary

THE USE OF VITAMIN D IN THE TREATMENT OF REFRACTORY RICKETS

The Council has given consideration to the use of relatively massive doses of vitamin D in the treatment of refractory rickets and has accepted at least one preparation designed for such use. As a result of this consideration and acceptance the Council has voted to revise the statement on vitamin D (New and Nonofficial Remedies, 1943, pages 582-583) by the addition of the following paragraph:

Another suggested use of massive doses of vitamin D is in the treatment of refractory rickets, that is, occasional cases of rickets which do not respond to treatment with the usual dosages or even much larger dosages of vitamin D. In some of these cases the rickets is due to a disturbance of the acid base balance and has been successfully treated by administration of sodium bicarbonate or a sodium citrate citric acid mixture. Massive doses of vitamin D have proved effective in the control in others. The quantity of vitamin D needed may be so large that it borders on the dosages of vitamin D that are definitely toxic, and such treatment should not be undertaken without first exploring other possibilities or without careful observation for signs of toxicity. Some investigators believe it desirable to examine the urine daily for calcium casts, albumin and red blood cells while the maintenance dose is being established. Others believe less frequent examination is necessary. After the dose is established weekly examination, using the Sulkowitch test for excessive excretion of calcium, is sufficient. The blood should be examined weekly or oftener to avoid a rise of calcium above 12 mg per hundred cubic centimeters if the dosage exceeds 20,000 units daily for the infant or 50,000 units for a child. If anorexia or nausea should appear, the child must be brought promptly to the attention of the physician and vitamin D administration should be discontinued. When the maintenance dose has been established, operative procedures to correct rachitic deformities may precipitate a temporary state of toxicity and the blood levels of calcium must be watched closely.

The Council voted further to revise the "Allowable Claims" which appear on pages 583-584 by the addition of the following sentence to claim 6, which appears on page 584:

If representations are made for use of massive doses of vitamin D in the treatment of refractory rickets they must be accompanied by adequate precautions with respect to the danger of toxic effects and how they can be avoided.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E SMITH, M.D. Secretary

VITAMIN B COMPLEX PREPARATIONS (See New and Nonofficial Remedies, 1943, p. 588)

The following products have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Brewers' Yeast Powder Fortified with Riboflavin and Nicotinic Acid. Contains dried brewers' yeast (*Saccharomyces cerevisiae*), debitterized, fortified with crystalline riboflavin and nicotinic acid to contain in each gram vitamin B₁ 50 U S P units (0.15 mg), riboflavin 0.3 mg and nicotinic acid 15 mg. Daily prophylactic dose for infants, ½ level teaspoon, children 1 to 6 years old, 1 level teaspoon, children 6 to 12 years old, 1½ level teaspoons, older children and adults, 2 level teaspoons mixed with water, milk or fruit juices.

Brewers' Yeast Tablets, 0.4 Gm (6 grains), Fortified with Riboflavin and Nicotinic Acid. Each tablet contains Abbott's Brewers' Yeast Powder Fortified with Riboflavin and Nicotinic Acid 0.4 Gm, providing in each tablet vitamin B₁ 20 U S P units (0.06 mg), riboflavin 0.12 mg, nicotinic acid 0.6 mg. Average daily dose, as a supplement to the diet, for children 6 to 12 years old, 6 tablets, older children and adults, 9 tablets, therapeutic doses must be determined for each patient.

DIGITALIS (See New and Nonofficial Remedies, 1943, p. 289)

The following dosage forms have been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tablets Digitalis 32 mg (½ grain) (⅓ U S P unit), 65 mg (1 grain) (⅔ U S P unit) and 0.1 Gm (1½ grains) (1 U S P unit) (keratin coated).

Pulvo-Caps Digitalis 0.1 Gm (1½ grains) (1 U S P unit) and 65 mg (1 grain) (⅔ U S P unit).

Tincture Digitalis Four fluidounces and 1 pint bottles.

OLEOVITAMIN A (See New and Nonofficial Remedies, 1943, p. 587)

The following dosage form has been accepted:

INTERNATIONAL VITAMIN SALES CORP., NEW YORK

Oleo Vitamin A Capsules. Each capsule contains 25,000 U S P units of vitamin A derived from fish liver oils.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 82)

The following dosage forms have been accepted:

E. S. MILLER LABORATORIES, INC., LOS ANGELES

Sterile Solution Procaine Hydrochloride 1% W/V 30 cc., 50 cc. and 100 cc. vials and 2 cc. and 5 cc. ampuls Preserved with 0.5 per cent chlorobutanol.

Sterile Solution Procaine Hydrochloride 2% W/V 30 cc., 50 cc. and 100 cc. vials and 2 cc. and 5 cc. ampuls Preserved with 0.5 per cent chlorobutanol.

RABIES VACCINE CHLOROFORM KILLED (See New and Nonofficial Remedies, 1943, p. 543)

The following dosage form has been accepted:

THE GILLILAND LABORATORIES, INC., MARIETTA, PA.

Rabies Vaccine (Chloroform Killed Virus) 0.5 cc. vials packaged in units of seven and fourteen vials.

SULFADIAZINE (See New and Nonofficial Remedies, 1943, p. 169)

The following dosage forms have been accepted:

E. R. SQUIBB & SONS, NEW YORK

Tablets Sulfadiazine 0.5 Gm

Sulfadiazine Powder (Sterilized) 5 Gm vial

SULFADIAZINE SODIUM (See New and Nonofficial Remedies, 1943, p. 188)

The following dosage forms have been accepted:

E. R. SQUIBB & SONS, NEW YORK

Sulfadiazine Sodium Powder (Sterilized) 5 Gm vial

Sulfadiazine Sodium Powder (Nonsterilized) 50 Gm bottle

¹⁰⁷ Snelling C. E. and Brown Alan J. *Pediat* 10:167 (Feb) 1937

¹⁰⁸ Hennig E. *Ztschr f Kinderh*. 61:379, 1939

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SATURDAY, OCTOBER 2, 1943

INFLUENZA RECEPTOLYSIN

New facts regarding the mechanism of virus infections of the respiratory epithelium have resulted from studies of virus hemagglutinins recently reported by Hirst¹ of the International Health Division, Rockefeller Foundation. Two years ago Hirst noted that influenza virus grown in the allantoic fluid of chick embryos would agglutinate adult fowl erythrocytes. This hemagglutinin could be used as a reliable quantitative index of the mouse infectious titer of influenza virus and for the titration of anti-influenza serums. The observation was promptly confirmed by other investigators,² who reported evidence that the influenza virus is actually adsorbed on fowl erythrocytes, from which it can be partially or wholly recovered by elution.

Quantitative studies of the rate and completeness of this virus adsorption yielded surprising results. For example, Hirst found that addition of the Lee strain of influenza B virus to a 1.5 per cent suspension of chicken erythrocytes caused the titer of the free, or uncombined, virus to fall from 128 units to less than 4 units by the end of ten minutes, a 94 per cent adsorption of the virus on the red blood corpuscles. This adsorption, however, did not result in a permanent chemical union between virus and erythrocytes, release of the adsorbed virus was noted within twenty minutes, increasing to a measurable amount by the end of two hours. There was no demonstrable multiplication of the virus in the blood suspension to account for this release.

The released virus was apparently unaltered as a result of its previous adsorption on the erythrocytes.

1 Hirst, G. K. The Agglutination of Red Cells by Allantoic Fluid of Chick Embryos Infected with Influenza Virus. *Science* **64**: 22 (July 4) 1941, The Quantitative Determination of Influenza Virus and Antibodies by Means of Red Cell Agglutination, *J. Exper. Med.* **75**: 49 (Jan.) 1942, Adsorption of Influenza Hemagglutinins and Virus by Red Blood Cells, *ibid.* **76**: 195 (Aug.) 1942.

2 McClelland, Laurella, and Hare, Ronald. The Adsorption of Influenza Virus by Red Cells and a New In Vitro Method of Measuring Antibodies for Influenza Virus, *Canad. Pub. Health J.* **32**: 530 (Oct.) 1941.

The blood cells, however, were definitely changed, as shown by their acquired insusceptibility to subsequent agglutination with influenza virus. To account for this insusceptibility, Hirst postulated the existence of specific haptens or receptor materials on the fowl erythrocytes, which he had reason to believe were complex polysaccharides. He assumed further that this receptor substance is destroyed by enzymes (or functions) of the influenza virus. Release of the virus was therefore pictured as a result of receptor hydrolysis, the resulting dehaptenized erythrocytes being incapable of adsorbing influenza virus. This is essentially a renaissance of the original Pasteur exhaustion theory of acquired immunity.

It seemed likely to Hirst³ that this in vitro adsorption and release of influenza virus might have its counterpart in the reactions between influenza virus and respiratory epithelium. He therefore repeated the experiments using mouse, rabbit and ferret lungs in place of fowl erythrocytes. The lungs were first perfused free from blood and then suspended in an Erlenmeyer flask with a side arm by means of which the external pressure could be increased or decreased. Virus infected allantoic fluid was introduced into the trachea of the suspended lungs, and the lungs were alternately expanded and compressed to insure uniform mixture. Samples of the allantoic fluid were removed at intervals and titrated for hemagglutinins and for their lethal effects on mice. These titrations showed an extremely rapid adsorption of the virus on the respiratory epithelium. With the PR8 virus less than 1 per cent remained unabsorbed after five minutes of the simulated respiratory movements. This was followed by a fairly rapid release of the virus, the original titer of the allantoic fluid being restored almost quantitatively in from two to five hours. As in previous tests with red blood cells, the rapidity of the adsorption and subsequent release of the virus varied with different viral strains. Heat inactivated and formaldehyde inactivated influenza viruses were also adsorbed and at the same rate, but there was no evidence of their subsequent release, presumably owing to inactivation of their enzymic function.

In order to test possible clinical applications of these observations, the tests were repeated on the intact lungs of living ferrets. In the case of ferrets killed at stated intervals after intratracheal inoculation, adsorption of the virus had taken place in the viable lung in much the same way as in the isolated blood free lungs. The adsorbed virus, however, remains permanently adsorbed on the epithelial cells of the living lungs.

3 Hirst, G. K. Adsorption of Influenza Virus on Cells of the Respiratory Tract, *J. Exper. Med.* **78**: 99 (Aug.) 1943.

release being still absent at the end of eight hours. A slight apparent release of one virus was noted at the end of twenty-four hours, presumably because of multiplication.

Assuming that virus release is due to enzymic hydrolysis of the specific receptor substance, one might be tempted to postulate that this nonrelease is due to enzyme inhibitors in the living tissue cells or adjacent blood plasma. Hirst, however, is inclined to attribute it to aggressive growth of the attached virus under natural conditions of infection, destruction of the specific receptor substance being a necessary preliminary to parasitism on or within susceptible tissue cells.

Aside from its theoretical interest, isolation and identification of the postulated specific receptor substance have numerous suggestive practical applications. Hirst's work, therefore, may well lead to new methods of influenza prophylaxis and therapy. The work is being continued in the International Health Laboratory.

THE INTERNATIONAL RED CROSS IN TIME OF WAR

The International Red Cross was born of war and still serves most actively in wartime. The International or Geneva Red Cross movement rests on the foundation of the individual national organizations even though these vary widely in structure and importance in different countries. Since 1928 the International Red Cross has been a three headed organization which includes the national societies of the Red Cross, the International Committee and the League of the Societies of the Red Cross.¹

During the war of 1870 the International Committee assumed for the first time the assistance to prisoners of war and created an agency for prisoners at Basle. Later this agency was removed to Geneva. Past experiences were reviewed in 1929, this resulted in the adoption of the revised convention of Geneva in that year regarding the treatment of prisoners of war. This convention was ratified by most countries except Finland, Japan, Russia and certain countries of Latin America.

The principal features of this code relate to the visiting of camps for prisoners of war by delegates of the International Committee. The official delegates may consult with trusted prisoners ("hommes de confiance") who have been selected by their comrades and who represent them. These visits to camps make it possible for the delegates of the committee to request the camp authorities for improvements, they allow for the intervention of the International Committee itself

By reciprocity these visits permit equal improvements to be made in the conditions of prisoners of war held by the other side.

The Central Agency for Prisoners in Geneva is concerned not only with prisoners of war but with all categories of war victims including wounded and sick, civilian internees, military internees in neutral countries, refugees in their own countries and civilians separated from their families by hostilities. This agency is consequently a vast organization with four big buildings in Geneva and 3,500 workers, it has received over 19 million letters and telegrams and has dispatched some 20 million. Some 60 thousand letters are received by this agency each day.

Cards of notice of capture are worded by the prisoners themselves. The prisoners are permitted to send these cards to their families and at the same time to the central agency after they reach camp. The agency also carries through special inquiries for prisoners, notably when sick, or for those who have disappeared. These inquiries allow more complete information to be transmitted to the families. Another function of the International Committee is to arrange for the repatriation of the severely wounded. This ordinarily involves an exchange, usually through a neutral country. The interests of civilian internees and civilians in general are also represented by the International Committee. The committee collaborates with the diplomatic representatives of the powers, aids in problems of transportation, reports all violations of the conventions and is sometimes called on to enter into relations with governments, National Red Cross Societies or in unusual judicial situations.

A monthly journal in French records much of the current work of the International Red Cross. Of particular interest to Americans are the reports of visits to military prison camps and civilian internees in Japan proper and in such places as Shanghai and Hong Kong. Japan, although not a signatory of the Geneva Convention, previously indicated its intention of complying with its provisions. In most camps visited, conditions for both military personnel and civilians appear to be satisfactory. One recent report concerning the Stanley Camp for interned civilians at Hong Kong makes the somewhat enigmatic statement that the composition of rations has been recently improved. Reports on Japanese camps for Chinese and vice versa and on Russian camps for Axis prisoners and the reverse are missing.

Altogether the International Red Cross exerts a powerful force toward the amelioration of the effects of war and represents an extension of the endeavors of the medical profession throughout its long history.

¹ Pictet, Jean S. *Revue Internationale de la Croix Rouge*. Geneva February 1943.

Current Comment

WAR SURGERY IN THE MIDDLE EAST

During the last nine months of 1942, 3,279 battle casualties were admitted to one military hospital on the lines of communication in the Middle East. Because of the enemy's rapid advance to El Alamein the arrival of wounded was so rapid that the hospital had to act as a casualty clearing station rather than as a base hospital. The mortality rate for the 300 casualties from Tobruk was 3 per cent and for the 500 casualties from the second battle of El Alamein it was 10 per cent. The mortality rate for 2,679 casualties from the first battle of El Alamein, when the hospital acted as a casualty clearing station, was only 1.3 per cent. The high mortality rate for the casualties from Tobruk and from the second battle of El Alamein is due to the fact that seriously ill patients were sent to the hospital. The figure 1.3 per cent is approximately accurate for most casualty clearing stations. In analyzing the results, Lieut Col R. K. Debenham¹ emphasizes that all of the wounds dealt with were a result of fighting in dry sandy desert, that the amount of clothing worn was very small so that only rarely was clothing found in a wound, and that sulfanilamide was used prophylactically. As a routine 10 Gm was dusted into the wound and another 10 Gm after operation, 5 tablets (2.5 Gm) were given by mouth at 6 a. m. and 6 p. m. daily for four days. The good results obtained in abdominal cases, particularly in those with bowel perforation, were due to early operation. Of the 11 patients with bowel perforation, the 9 who recovered were operated on in forward areas and were kept there from five to sixteen days, the cardinal points seem to be early operation, late evacuation, intravenous saline drip, continuous gastric suction and sulfadiazine. This is difficult with mobile warfare but was possible when the line of battle was static. The worst cases of burns came from fighting in tanks. Because facilities for preliminary cleansing were not obtainable, tanning was discarded in favor of cleansing and powdering the area with sulfanilamide and dressing with petrolatum gauze. Patients traveled best with plenty of padding, and for wounds of limbs a light, well padded plaster of paris cast was definitely beneficial. In the early stages intravenous plasma or serum was considered essential. Blood transfusions were used for secondary anemia a week or ten days later. Patients with severe burns traveled badly, even up to two weeks after burning. After a long journey they arrived toxic and ill. It is easy to put too much sulfanilamide powder on the burns, especially in severe cases, as sulfanilamide is readily absorbed from burned areas and gives rise to profound toxemia. Blood and plasma or serum transfusions were used for shock, for burns and during

convalescence when the hemoglobin fell below 60 per cent. Gas gangrene has been rare and gas infection uncommon. No case of tetanus has been seen. Among the "don'ts" to be observed are listed:

Don't suture wounds. Don't suture amputation stumps.
Don't amputate at the site of election, go below it.
Don't use packing except to stop hemorrhage.
Don't use drainage tubing.
Don't use unpadded plasters.
Don't forget to give morphine before a long bumpy journey.
Don't forget to give plenty of fluids by mouth.
Don't forget that the ligature of a main vessel should be prominently recorded on the field medical card and underlined.

The salient features of war surgery in the Middle East are based on the principles which have been in the process of evolution since the beginning of the war. They are summarized as follows: organized resuscitation and the use of local and general sulfanilamide, thorough immobilization, conservative surgery and wound trimming instead of wound excision, avoidance of tension around wounds and provision of a good blood supply in damaged limbs, and the necessity to adapt and improvise articles to fulfil functions for which they were not intended.

PERSONAL LIABILITY TO ACCIDENT

The toll from accidents in 1942 was 93,000 killed and 9,200,000 injured. According to the National Safety Council¹ two out of three industrial accidents—and many of the nonindustrial ones—have personal as well as mechanical causes. The importance of identifying accident-prone persons preferably before the occurrence of the accident is hence obvious. Dunbar² discusses a series of tests based on educational and vocational histories, family relations and information from personal observations, especially with regard to interests and addictions, attitude toward authority and impulsive behavior, by means of which it is believed that accident-prone persons can be identified with reasonable accuracy. The major sphere of difficulty of the accident-prone person appears to lie in the frequency of conflict with authority and the means by which such conflict is resolved. The tendency toward impulsive behavior, on which evidence may be gathered both from past history and from observation of actual behavior under stress, is also of importance, Dunbar says. If the validity of the proposed methods of selecting accident-prone persons can be confirmed—and ample opportunities are available to do so both in industry and in military life now—much may be learned concerning the possibilities for reeducation and the selection of persons for exclusion from certain occupations. Under the stress of war the available technics can be more readily evaluated just as the problem of accident prevention becomes even more than usually acute.

¹ Accident Facts, 1943 Edition. National Safety Council, Inc. Chicago.

² Dunbar, Flanders. Medical Aspects of Accidents and Mistakes in the Industrial Army and in the Armed Forces, War Med 4: 161 (Aug) 1943.

¹ Debenham, R. K. War Surgery in the Middle East. Brit. M. J. 2: 223 (Aug 21) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

EXAMINATION DATES FOR CANDIDATES FOR MEDICAL CORPS, REGULAR ARMY

The War Department announced on September 7 that examinations for the purpose of qualifying candidates for appointment as first lieutenants in the Medical Corps, Regular Army, to fill vacancies occurring during the fiscal year 1945 will be held on Jan 24 through Jan 27, 1944. The examinations are open to all male citizens of the United States who are graduates of acceptable medical schools in the United States and Canada, who have completed one year's internship in an approved hospital and who will not be over 32 years of age at the time it will be possible to tender a commission. The examinations will be conducted by boards of medical department officers and will consist of a physical examination, a written examination in professional subjects and a determination of the candidate's adaptability for military service. Candidates who fail a first examination will not be permitted to take more than one subsequent examination.

Full information and application blanks will be furnished on request by the Adjutant General, War Department, Washington 25, D. C. Applications from candidates in the continental limits of the United States received after Jan 7, 1944 will not be considered.

TWENTY-FOURTH CLASS OF MEDICAL ADMINISTRATIVE CORPS OFFICERS

The twenty-fourth class of Medical Administrative Corps Officers at the Officer Candidate School, Camp Berkeley, Texas, graduated on September 16. This class was the last to graduate under the twelve week training schedule. Future classes will complete a sixteen week program, which does not include any more material but emphasizes the physical aspects of training with more field exercises and bivouacs. The graduation address was delivered by Brig Gen Roy C Heflebower, school commandant, and the oath of office was administered by Major Miles G Ball, M. A. C., executive officer.

ENLISTED WACS OFFERED OPPORTUNITY TO BECOME PHYSICAL THERAPY AIDES

The War Department announced on September 13 that qualified enlisted members of the Women's Army Corps will be given an opportunity to become physical therapy aides with the relative rank of second lieutenant serving in the Medical Department of the Army of the United States. The training courses in physical therapy will begin in October under the direction of the Surgeon General, who will select the WAC personnel to be trained. On successful completion of the study and three months practice, the Wacs will be discharged from the Women's Army Corps and will be appointed as physical therapy aides. To be eligible for this course, applicants must be under 44 years of age, must have completed the WAC basic training and must have a degree in physical education or two years of college study emphasizing the biologic sciences. Successful applicants will receive six months of training in physical therapy in classes at universities and hospitals. On completion of those studies they will be assigned to selected army hospitals for practical experience in the treatment of wounded soldiers. The first groups selected will be sent to Leland Stanford Uni-

versity at Palo Alto, Calif., the University of Wisconsin at Madison, and the D. T. Watson School of Physical Therapy at the University of Pittsburgh. They will be trained at government expense and be quartered on or near the university campuses. Later it is expected that Walter Reed General Hospital, Washington, D. C., and other army general hospitals will participate in the training. Major Emma E. Vogel is the director of physical therapy aides.

MICHAEL REESE HOSPITAL UNIT IN ITALY

An army evacuation hospital built around the original Michael Reese Hospital Unit which was formed in Chicago is reported to have landed in Italy with the American Fifth Army. The hospital was immediately set up and can handle 1,000 patients and treat every type of casualty. Hundreds of tons of equipment were landed with the unit, and the personnel includes specialists in every branch of surgery. Lieut. Col. Philip A. Daly of Chicago is in command of the unit, and other medical personnel are as follows:

Major Alfred E. Jones, Chicago	Capt. Saul A. Mackler, Chicago
Major Manuel E. Lichtenstein, Chicago	Capt. Philip M. Marcus, Chicago
Major Samuel Perlman, Chicago	Capt. William H. Parker, Oak Park, Ill.
Major Laurence M. Weinberger, Chicago	Capt. Alfred J. Platt, Chicago
Capt. Harry E. Barnett, Chicago	Capt. Arthur H. Schoenwetter, Chicago
Capt. Richard M. Bendix, Chicago	Capt. Morris J. Shapiro, Chicago
Capt. David Z. Berger, Chicago	Lieut. Sol Z. Draznin, Chicago
Capt. Ernest D. Bloomenthal, Chicago	Lieut. Samuel H. Fraerman, Chicago
Capt. Joseph A. Carbone, Gary, Ind.	Lieut. Jesse G. Garber, Chicago
Capt. Melvin R. Cohen, Chicago	Lieut. Wilburt Gordon, Chicago
Capt. Norman R. Cooperman, Chicago	Lieut. Ralph R. Landes, Chicago
Capt. Sol Ralph Friedlander, Chicago	Lieut. Samuel M. Marcus, Chicago
Capt. Richard E. Heller, Chicago	Lieut. Manuel L. Stillerman, Chicago
Capt. Harold Laufman, Chicago	Lieut. Leonard A. Stine, Chicago
	Lieut. Leonard Weinstein, Chicago

DR MEYER AWARDED SILVER STAR

Capt. Alfred C. Meyer, Chicago, of the Army Medical Corps has been awarded the Silver Star for heroism and outstanding achievement in operating on wounded soldiers while under Japanese gunfire in New Guinea. He is said to be serving with the first portable hospital to be established by the Army. A portable hospital is understood to be one in which the medical equipment and supplies are so packed and arranged that in jungle warfare they may be carried forward near the front lines, if necessary, by hand.

PRISONER OF THE JAPANESE

The first direct word from Capt. Gerald M. Greenspahn, formerly of Chicago, since Nov. 27, 1941, was recently received by his family, indicating that he is being held as a prisoner of the Japanese in the Philippines in prison No. 1. Captain Greenspahn graduated from Northwestern University Medical School, Chicago, in 1935 and was staff physician of the American Hospital before entering the service.

FLIGHT SURGEONS ASSISTANTS

A class of ninety-nine flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, August 21. Brig Gen. Eugen G. Reinartz, U. S. Army, is commandant of the school.

NAVY

COMMISSIONING OF APPRENTICE SEAMEN
IN MEDICAL SCHOOLS ON COMPLETION OF MEDICAL EDUCATION

The Bureau of Naval Personnel of the Navy Department, Washington, D. C., has announced that apprentice seamen, Class V-12(S), who are medical students will, on satisfactory completion of their medical education, be appointed to the rank of Lieutenant (jg), (MC), U. S. Navy, or Lieutenant (jg), MC-V(G), U. S. Naval Reserve, in accordance with the following procedures:

(a) For appointment in the grade of Acting Assistant Surgeon, rank of Lieutenant (junior grade), (MC), U. S. Navy:

1 Students, within three months of completion of their junior year and at any time thereafter, may submit application to the Bureau of Medicine and Surgery via the commanding officer for examination for appointment as Acting Assistant Surgeon for intern training in the U. S. Navy. Commanding officers of Navy V-12 units at medical schools have been provided with a supply of the appropriate application forms.

2 The Bureau of Naval Personnel, on the recommendation of the Bureau of Medicine and Surgery, will authorize qualified applicants to participate in examinations which will be conducted at all continental U. S. naval hospitals during January, May and September of each year.

3 Candidates will receive official notification via their commanding officer of the results of their examination approximately two months following the date thereof.

(b) For appointment as Lieutenant (junior grade), MC-V(G), U. S. Naval Reserve:

1 Students who did not apply or failed to qualify on examination for a naval internship and have contracted for a civilian internship in lieu thereof will be eligible for this appointment on satisfactory completion of their medical education.

(c) Commanding officers of Navy V-12 units at medical schools are requested to submit to the Bureau of Naval Personnel via the Bureau of Medicine and Surgery sixty days prior to established graduation dates two lists in triplicate of senior class V-12(S) medical students under their command who have been reported by medical school deans as scheduled to graduate. One list should include only the names of those students who have qualified for appointment as Acting Assistant Surgeon for intern training in the U. S. Navy and the second list the names of those students committed to a civilian internship and thus qualified for appointment as Lieutenant (jg), MC-V(G), U. S. Naval Reserve. It is desired that there be incorporated in these reports data constituting the commanding officer's recommendation as to the possession of requisite officer-like qualities in each case together with remarks on the following points:

1 Whether any student who participated in an examination for appointment as Acting Assistant Surgeon has failed to receive official notification as to the results of his examination.

2 Whether each student who has qualified for appointment as Acting Assistant Surgeon intends to accept the appointment on graduation or to decline for the purpose of attending a civilian internship. In the latter case, graduates will be appointed Lieutenant (jg), MC-V(G), U. S. Naval Reserve, and released to an inactive duty status.

3 The names and locations of the hospitals in which Naval Reserve appointees will serve civilian internships indicating the type and duration (dates of commencement and completion) of the internship contracted for in each case.

4 The necessary delay, not to exceed thirty days, in reporting at the initial permanent duty station required by each individual for the purpose of taking state board medical examinations. (In cases in which state board medical examinations will not be completed during the thirty day period following graduation, newly appointed officers will report to assigned stations of duty and, at the appropriate time after reporting, submit a request to the commanding officer of the station to which assigned for such leave as may be necessary to participate.)

Commanding officers of V-12 units at medical schools where graduation dates have been established for October 1943 will forward the lists requested as soon as possible.

(d) The commanding officers are directed to forward a completed report of physical examination, form Y, in duplicate for each student named in the foregoing lists who is recommended for appointment.

(e) On receipt of this report from commanding officers, the Bureau of Medicine and Surgery will make appropriate recommendation by endorsement to the Bureau of Naval Personnel. Appointments will be issued for fully qualified applicants and will be forwarded to commanding officers for delivery on graduation.

(f) Appointments in the grade of Acting Assistant Surgeon for internship with the rank of Lieutenant (junior grade), (MC), U. S. Navy, will be accompanied in each case by active duty orders to the naval hospital to which such appointees have been assigned for intern training.

(g) Appointments as Lieutenant (junior grade), (MC-V(G), U. S. Naval Reserve, will be written with date of rank approximately ten days after graduation. If appropriate, commanding officers will furnish a transportation request and meal tickets covering return of these men as Apprentice Seamen, class V-12(S) or SV-12(S) to the place to which initial orders to active duty were addressed or they will be granted a travel allowance of 5 cents a mile in lieu thereof in accordance with the provisions of reference (a). These men will be instructed by the commanding officer to appear before a naval officer qualified to administer oaths or before a notary public on the date specified as "date of rank" in order to execute the acceptance and oath of office. The commanding officer shall explain clearly that a man cannot execute an acceptance and oath of office as a naval officer and subsequently use transportation forwarded to him as an enlisted man.

(h) The appointment for any man who fails to graduate will be returned by the commanding officer to the Bureau of Naval Personnel for cancellation and appropriate disposition of the man.

(i) Additional information relative to this subject will be found in references (b) and (c).

FOREIGN LANGUAGE REQUIREMENTS FOR
PREMEDICAL STUDENTS

The Bureau of Naval Personnel of the Navy Department, Washington, D. C., announced on September 9 the interpretation of the foreign language requirements for premedical students as referred to in References (a) V-12 Bulletin No. 1, (b) V-12 Bulletin No. 22, and (c) V-12 Bulletin No. 2.

1 Reference (b), page 12c, language requirement for subject students shall be interpreted as follows:

V-1 and V-7 transfers to V-12, who are pursuing a premedical program shall complete the equivalent of twelve college semester hours of a single foreign language. French, German or Spanish is preferred, but other languages may be substituted at the discretion of the college authorities. A high school unit (one year) is to be considered equivalent to six semester hours.

2 In accordance with reference (c), page 3, paragraph 8, other premedical students entering the V-12 program with advanced standing must meet minimal requirements prescribed for V-1 and V-7 transfers to V-12.

3 Only premedical students entering the V-12 program as freshmen will be required to take the fully prescribed course outlined in reference (a). Attention is invited to the fact that French, German or Spanish is preferred, but other languages may be substituted under exceptional circumstances. Interpretation of "exceptional circumstances" shall be the responsibility of the college authorities.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

INTERN-RESIDENT PROGRAM FOR HOSPITALS

Considerable confusion seems to have arisen regarding the number of internships and residencies which may be maintained by hospitals under the new intern resident program which has been made possible by the deferment of certain numbers of interns and residents holding reserve commissions in the Army and Navy.

To meet the minimum needs of hospitals nationally, twice as many residents as will be deferred by the Army and Navy will be required. The remaining half (those not deferred by the Army and Navy) must be made up of physically disqualified men and women in order to give the hospitals minimum adequate house staff coverage.

This program definitely does not state that a hospital may only, or will necessarily, retain one third of its interns to serve as junior residents, nor does it mean that a hospital may only, or will necessarily, retain one half of its junior residents as senior residents. These fractions were published to show the overall proportion of commissioned officers now under the jurisdiction of the Army and Navy who would be deferred by the military services to serve as one source of personnel for civilian hospital appointments.

The program does state that, generally speaking, hospitals will be able to retain about two thirds of their 1940 house staffs, provided there has been no pronounced decrease or increase in patient load since that time. This two thirds will comprise those ineligible for military service as well as those deferred by the Army and Navy.

The first fraction represents the proportion of deferments by the armed forces of commissioned officers (9-9-9). The second figure concerns the allocation—the combined deferred officers and those physically disqualified—to the hospitals (approximately 66⅓ per cent of the 1940 staff). Each hospital should procure as many physically disqualified men as possible, and only the remainder unable to be procured from this source can be obtained from those deferred by the Army and Navy.

The hospital questionnaires, which the Procurement and Assignment Service urgently requests hospitals to return, will give the needed information to determine a general basis for estimating the number of interns and residents which each hospital should have on the basis of the 1940-1942 house staff. There will probably be some necessary changes in individual hospitals which have peculiar or particular problems, but the formula will apply to all general hospitals.

MISCELLANEOUS

NATIONWIDE CAMPAIGN FOR QUININE

In a nationwide campaign which began seven months ago for the conservation of quinine for the armed forces, more than eleven million 5 gram doses of quinine have been collected and are now en route to army and navy fighting fronts. The campaign was supported by thousands of retail pharmacists, wholesale druggists and hospitals and exceeded its goal by nearly 50 per cent. More than sixteen thousand packages have been received at the National Quinine Pool, American Pharmaceutical Association, Constitution Avenue and Twenty-Second Street NW, Washington, D. C. The quinine arrived in the form of powder, plain and sugar coated tablets, crystals and liquid and was of both foreign and domestic manufacture. The medical departments of the Army and Navy have assigned pharmacists to assort and classify the contributions, which will be accepted until October 15.

If a school admits and retains married students, the "health permitting" clause in the application signed by the cadet nurse allows the school to provide maternity leave. This clause applies in the same fashion to the graduate nurse who has pledged herself to render essential nursing service throughout the war. Students who are enrolled in schools in which marriage of students is prohibited, if they wish to marry before completion of the program, might consider the possibility of transfer to another school, although the preferable course to follow would be that of waiting to marry until after graduation.

PUBLIC HEALTH UNDER HITLER

The Greek government has decided to supply all consumptives insured at social insurances with better food consisting of meat, eggs, sugar and butter. *Donauzeitung* Belgrade, July 16, reports. Previously this allowance was granted in grave cases only. In Athens consumptives are estimated to number 20,000.

NEW FEE SCHEDULE FOR THE EMERGENCY MATERNITY AND INFANT CARE PROGRAM

Under a new fee schedule effective August 18, medical care was authorized for 974 wives and children of enlisted men of West Virginia for the first fifteen weeks' operation of the plan proposed by the state health department for the emergency Maternity and Infant Care Program. This plan was approved by the Children's Bureau of the Labor Department in Washington. As of August 19, a total of 361 West Virginia doctors had qualified for participation in this program, which is under the direct supervision of Dr. Lenore Patrick, director of the Division of Maternal and Child Hygiene. Fifty-five approved hospitals were taking part.

According to DNB of July 24 a commission sent by the Spanish minister of labor to study the German health insurance system is at present staying in Berlin. The members of the commission have the task of acquainting themselves with the statutory regulations and the organization of German health insurance. The Spanish government intends to introduce a health insurance system in Spain. The Spanish visitors will have the opportunity to study all institutions concerned in the great German reich and in the protectorate and to acquaint themselves with the working of the German health insurance system. The reich minister of labor, Franz Seldte, received the members of the commission. In his address he spoke of his pleasure at Spain's intentions to organize a health service for the Spanish workers. The reich ministry of labor would gladly cooperate to help Spain to realize these aims.

SCHOOLS DETERMINE POLICY IN REGARD TO MARRIAGE OF MEMBERS OF THE U. S. CADET NURSE CORPS

According to the Division of Nurse Education of the U. S. Public Health Service, in many schools marriage does not prevent the admission and retention of students. In some schools maternity leave is granted. In a few schools married applicants are not admitted and married students are not retained. The fact that a school is receiving federal funds under the Bolton act does not alter a school's policy in regard to marriage. An applicant before enrolling in any school of nursing as a U. S. cadet nurse should understand the school's policy on marriage.

12-Uhr Blatt of July 10 prints a description of the largest underground hospital in Berlin. Operations are carried out in this hospital every night in order to be prepared in case of an emergency. Expectant mothers are accommodated here every night and many babies have already been born in this hospital.

Rumania *Curentul* of July 22 states that medical students must do one month's military service plus one month's medical practice during the summer vacation.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status—H J Res 159 has passed the House and has been favorably reported without amendment by the Senate Committee on Appropriations, making available an additional sum of \$18,620,000 to provide obstetric and pediatric care to the wives and infants of enlisted men of the fourth, fifth, sixth and seventh grades in the armed forces of the United States. An effort was made on the floor of the House to amend the joint resolution so that the federal money could be made available in the form of allotments to the wives of servicemen, but the amendment was defeated by a vote of 115 to 8.

Bills Introduced—The President has submitted to Congress a supplemental estimate of appropriation for the Veterans' Administration, for the fiscal year 1944, in the amount of \$10,356,000, to provide 3,950 additional beds for neuropsychiatric patients at thirteen existing facilities of the Veterans' Administration (H Doc 280). H R 3204, introduced by Representative Lynch, New York, undertakes to provide a system of old age and survivors' insurance for employees of certain organizations not at present within the coverage of the Social Security Act, such as religious, charitable, educational and scientific organizations. H R 3293, introduced by Representative Peterson, Florida, provides that, notwithstanding any provision of law or veterans' regulation, the pension, compensation or retirement pay of a veteran or the war with Spain, including the Philippine Insurrection and the Boxer Rebellion, shall not be reduced while such veteran is being furnished hospital treatment or institutional or domiciliary care by the United States or any political subdivision. H R 3294, introduced by Representative

Talbot, Connecticut, provides that any blind person who is traveling on a train being operated by any common carrier by railroad subject to the Interstate Commerce Act may keep his seeing eye dog with him in any coach or Pullman car of such train.

DISTRICT OF COLUMBIA

Change in Status—S Res 178 has been agreed to, authorizing the Senate Committee on the District of Columbia to investigate conditions at Gallinger Municipal Hospital, with particular reference to sanitation, food, diet and the treatment and care of tuberculous patients. The committee will be authorized to call on the United States Public Health Service for such professional, technical or other assistance as it may deem necessary for the purposes of the investigation.

Bills Introduced—S 1340, introduced by Senator McCarran, Nevada, proposes to establish a sanitary code governing the operation of restaurants in the District of Columbia. Among other things the bill provides that, when suspicion arises as to the possibility of transmission of infection from any restaurant employee, the health officer will be authorized to require (1) the immediate exclusion of the employee from all restaurants and (2) the immediate closing of the restaurant concerned until no further danger of disease outbreak exists. H R. 3314, introduced by Representative Randolph, West Virginia, provides for the disposition of funds collected by District of Columbia examining, licensing and other boards and commissions, including the Commission on Licensure to Practice the Healing Art.

MEDICAL ECONOMIC ABSTRACTS

OHIO RURAL MEDICAL SERVICE PLAN

Several governmental and private organizations asked the Ohio State Medical Society to join in setting up a prepayment medical service plan for farmers in Logan County. The council of the Ohio State Medical Society asked the Public Relations Committee to investigate the situation. The chairman of that committee submitted the following recommendation, which was adopted by the council.¹

"That the council authorize the use of an amount, not to exceed \$15,000, from the reserve fund of the association for the organization and establishment of a medical service plan in

Logan County under the terms of the Ohio Enabling Act, provided the establishment of a plan in that county has the approval and active support of the Logan County Medical Society, that \$10,000 of this amount would be advanced for the purpose of meeting the financial provisions of the Enabling Act and that the balance would be used under the direction of the Committee on Public Relations and Economics for preliminary organizational work and activities."

In submitting the foregoing recommendation, Dr. Hein pointed out that the question will be discussed by the Logan County Medical Society as soon as that society is informed as to what assistance, financial and otherwise, the Ohio State Medical Association will contribute.

¹ Proceedings of the Council, Ohio State M J 39 756 (Aug.) 1943

WOMAN'S AUXILIARY

Louisiana

The annual meeting of the Woman's Auxiliary to the Louisiana State Medical Society was held in Baton Rouge recently with the president, Mrs. Clarence B. Erickson, presiding. Mrs. Richard H. Clark, president of the Southern Medical Association auxiliary, and Mrs. Sam Houston, wife of the governor of Louisiana, were guests of honor. Mrs. Houston extended an invitation to all those present to attend a reception at the executive mansion that evening.

Dr. Emmet Irwin, president of the Louisiana State Medical Society, visited the auxiliary meeting and outlined plans for

the coming year. Mrs. George Taquino is the incoming president and Mrs. Rhodes Spedale is the president-elect.

Colorado

The board of the Woman's Auxiliary to the Denver County Medical Society has asked each member to contribute \$2.38 in excess of dues to the student loan and emergency funds this year. The fund will be used to assist medical students who are unable to pass the Army or Navy physical requirements and who are on their own resources to complete a medical education. The emergency fund is to be available for use in aiding the families of young doctors in service.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Gift for Library—Dr Theodore S Kimball, pathologist of the 47th General Hospital group, Modesto, recently presented the White Memorial Medical Library of the College of Medical Evangelists, Los Angeles, with \$500 to buy books for the hematology section of the library. Dr Kimball was associate professor of pathology at the College of Medical Evangelists.

Universities and the Medical Profession—The San Francisco County Medical Society devoted its September 14 meeting to a discussion of "The Universities and the Medical Profession." The speakers were Drs Loren R Chandler, dean, Stanford University School of Medicine, on "The Place of the Practicing Physician in Medical Schools", Francis Scott Smyth, dean, University of California Medical School, "Some Features of Medical Education Under the Present Circumstances," and Donald B Tresidder, president, Stanford University, "Some Major Problems of Education Confronting a Private University Now and In the Postwar Period."

Public Health Officials and Industrialists Cooperate—A committee called the Industrial Division of the City of Los Angeles and County Defense Council has been formed to bring about a closer understanding by public health officials in the area and the industrialists. The tentative program of the committee aims (1) to establish and maintain an advisory council of public health officers and representatives of the private medical profession, (2) to provide a common point of initial contact for industrial management on all problems of industrial health, (3) to effect practical procedures for prompt reference of these problems to the proper medical authorities, and (4) to undertake an educational campaign, using the press, radio and direct mail to convince industrial management and employees (a) of the importance of preventing interference with the war production program by preventable employee illnesses, (b) of the possibility of serious epidemics under present and anticipated conditions of housing and inadequate nourishment and resulting from the migration of workers from other sections of the country where health supervision has not been provided, (c) of the necessity for preemployment medical examination not as a basis of applicant exclusion but, first, to aid persons with communicable diseases to contact corrective medical procedures and, second to assure the placement of new employees in occupations suitable to their health status, and (d) of the advisability of providing continuing medical inspections to discount the possibility of the spreading of diseases into industry from outside sources.

DISTRICT OF COLUMBIA

Personal—Mr Edward K Funkhouser has been appointed executive secretary of the District Tuberculosis Association. According to *Medical Annals*, Mr Funkhouser has served for the past eighteen years as executive secretary of the Passaic County, N J, Tuberculosis and Health Association. — Dr Charles C Chapple has been appointed chief medical gas officer in the Office of Civilian Defense, and Abraham N Franzblau, P A Surgeon, U S Public Health Service, has been relieved as acting medical gas officer to be assigned as assistant to the chief medical officer.

New Blood Donor Center—The dedication of the new District Red Cross blood donor center at the Acacia Building, Washington, took place on July 31. The center is operated under the direction of the District Red Cross and is staffed by Army and Navy medical officers and Red Cross personnel, both paid and volunteer. Lieut Eugene W Higgins (MC), U S Naval Reserve is physician in charge. The invocation was delivered by Capt Robert D Workman, chief of the navy chaplains and the speakers included Major Gen. Norman T Kirk, surgeon general of the U S Army, Rear Admiral Harold W Smith (MC) U S Navy and Fred M Vinson, director of economic stabilization, who read an address by James F Byrnes, director of war mobilization. The center is housed in the building of the Acacia Mutual Life Insurance Company which presented space for the center to the Red Cross.

FLORIDA

Time Limit Set to Register Medical Licenses—Licenses to practice medicine in Florida must henceforth be registered within sixty days of the date shown on the license, in accordance with an amendment to the Florida statutes which became effective June 11. The original law required that every license to practice medicine be registered in the office of the clerk of the circuit court of the county in which the licensee resides or in which his practice is intended to be carried on, but no time limit was specified. Licenses have been recorded as late as twenty years after the date of issuance. All unregistered licenses which were in effect on June 11 of this year, when the new law became effective, must be recorded within six months of that date. It is expected that the new law will help prevent the recording of fraudulent licenses.

ILLINOIS

Occupational Therapy—A new curriculum on occupational therapy has been set up by the University of Illinois. Students will spend their first five semesters of study on the Urbana-Champaign campus and four semesters in the college of medicine, Chicago.

Botulism Antitoxin Now Available—The state department of public health is now making available to Illinois physicians, without charge, botulism antitoxin, combined types A and B, for emergency use in the care of persons who have eaten food that is so poisoned. The antitoxin may be obtained from the department's offices at Springfield and from the department's laboratories at Carbondale, Champaign and Chicago.

Dr Fitzgerald Named Supervising Ophthalmologist for Public Aid Commission—Dr James Robert Fitzgerald, clinical associate in ophthalmology, Loyola University School of Medicine, Chicago, has been appointed supervising ophthalmologist of the Illinois Public Aid Commission. In this capacity he will review the reports made of examining ophthalmologists on applicants for aid under the blind assistance program and will determine the eligibility of these applicants on the basis of loss of sight. He will also provide the commission's staff with technical advice on general policy and on individual problems in the administration of the program. Initial grants under the program, which is being financed jointly by the state and federal governments were to be started on October 1. Under the program, aid will be furnished on the basis of need to blind residents of Illinois who are 18 years of age and over. Where possible, treatment will be given to restore the sight of recipients of this aid. Special efforts will be made to assist recipients to become self supporting.

Chicago

Dr William Hibbs Made Medical Director at Presbyterian—Dr William G Hibbs, associate clinical (Rush) professor of medicine, University of Illinois College of Medicine, has been appointed medical director of Presbyterian Hospital. He began his work on August 1. Dr Hibbs graduated at Rush Medical College in 1920 and served his internship at Presbyterian, where he has been a member of the regular staff since 1925. He represents the American Medical Association on the joint committee on hospital library service.

Nutrition in Wartime—The Institute of Medicine of Chicago will conduct a postgraduate assembly on "Nutrition in Wartime," November 17-18. The program will be devoted to phases of nutrition that are of particular interest to practicing physicians, dentists, nutritionists and dietitians. Among the speakers will be:

- Frank L Gunderson Ph D Washington D C The Impact of the War on the Diet of the City and Rural Dweller
- Dr Leonard G Rowntree Washington D C The State of Nutrition in Urban and Rural Populations as Reflected by Selective Service Rejections
- Dr John B Youmans Nashville Tenn Early Clinical Recognition of Nutritional Deficiencies
- Dr Paul R Cannon Chicago Some Pathologic Aspects of Under nutrition
- William A Perlzweig Ph D, Durham N C Laboratory Aids in the Evaluation of Nutritional Deficiencies
- Lydia J Roberts Ph D Chicago Present Day Concepts of Nutritional Requirements
- William C Rose Ph D Urbana Ill The Role of Protein in the Diet
- Dr George H Whipple Rochester N Y Food Proteins Blood Proteins and Disease Therapy
- Dr Samuel Soskin Chicago The Role of Carbohydrate in the Diet
- Dr Anton J Carlson Chicago Some Obstacles in the Path Toward an Optimum Diet
- Dr Julian D Boyd Iowa City Teeth as An Index of Nutrition
- Irene Macy Hoobler Ph D, Detroit Nutritional Requirements in Normal Pregnancy and Lactation
- Dr Edward H Ryneanson Rochester Minn Overweight and Under weight
- Dr Henry T Ricketts Chicago The Use of Carbohydrate in the Treatment of Diabetes
- Dr Morris Fishbein Editor of THE JOURNAL, Uses and Abuses of Vitamins

There will be six panel discussions on therapeutic diets and rationing, current practices in infant feeding, parenteral nutrition methods and indications, the proper place of accessory vitamins in the diet, can dental caries in the young and in pregnant women be controlled by diet? and controversial aspects of diet in diabetes. Another feature will be a "Nutrition Information Please" with Dr Fishbein acting as moderator and Drs Gunderson, Perlzweig, Rose, Rowntree, Whipple and Youmans comprising the board of experts.

INDIANA

Dr Lawson Observes Ninety-Fourth Birthday—Dr Wilson T. Lawson, Danville, said to be the oldest practicing physician in Indiana and the oldest living graduate of Wabash College, Crawfordsville, observed his ninety-fourth birthday on September 3. Dr Lawson is health officer of Hendricks County and still takes care of his own office work, making some calls, newspapers report.

Personal—Frank G. Laird, who has been acting as president of the Indianapolis Board of Health since the retirement of Dr Maurice J. Barry, was elected president of the board at the annual business meeting on July 16. Dr Leonard A. Ensminger was elected vice president and Dr Herman G. Morgan was elected secretary and city health officer for the thirty-second year.—Dr Charles C. Crampton, Delphi, on June 22 observed his completion of fifty years in the practice of medicine. His associates in the Arnett-Crockett Clinic in Lafayette presented him with a diamond pin denoting that he had served as commander of the American Legion. He has been a past president of both the Monon and Wabash railroads associations, of the county medical society and of the eleventh councilor district of the state medical society.—Dr Stanley A. Dowiat, Cicero, Ill., has been appointed superintendent of the Smith-Esteb Memorial Hospital, Richmond, to succeed Dr Henry Vernon Madsen, resigned.—Philip S. Winnek, formerly of Stamford, Conn., has become director of research of Pitman-Moore Company, Indianapolis, pharmaceutical and biologic manufacturers.

MASSACHUSETTS

Dr Harry Solomon Named Professor of Psychiatry at Harvard—Dr Harry C. Solomon, clinical professor of psychiatry, has been appointed professor of psychiatry at Harvard Medical School and medical director of the Boston Psychopathic Hospital, succeeding the late Dr C. Macfie Campbell. Dr Solomon graduated at Harvard in 1914 and has been on the faculty there since 1915.

Grant for Work in Immunochemistry—The Rockefeller Foundation has awarded a grant to William C. Boyd, Ph.D., associate professor in biochemistry, Boston University School of Medicine, to enable him to continue his research work in immunochemistry for a two year period. A former grant received from the Guggenheim Foundation enabled Dr Boyd to do original research in Egypt. He graduated at Harvard University, Boston, in 1925. He has been a teaching fellow in the Boston University School of Medicine since 1926 and received his Ph.D. there in 1930.

MICHIGAN

Personal—Dr Edward L. Collins, Grand Rapids, has been appointed superintendent for the Michigan Institute for the Blind at Saginaw. Dr Collins has been blind since a child.—Dr Albert A. Hughes, Detroit, has been elected Most Worshipful Grand Master of Michigan Masonry.—Dr David H. Burley recently completed fifty years of practice in Almont, he is also a registered pharmacist.—Dr Wesley H. Mast, Petoskey, has been appointed a member of the state advisory council of health for a six year term ending June 30, 1949.—Dr Leslie E. Coffin, Painesdale, was installed as president of the Upper Peninsula Medical Society at its recent meeting in Iron Mountain and Dr Nathan J. Frenn, Bark River, was chosen president-elect. Dr Robert J. McClure, Calumet, secretary of the Houghton-Baraga-Keweenaw County Medical Society, will be the secretary of the Upper Peninsula Medical Society during the ensuing year.

Committees on Workers' Health—The Michigan State Medical Society and the United Auto Workers have agreed to set up committees to confer on medical and health problems of Michigan's industrial workers, newspapers report. Members of the committee appointed by the state medical society include Drs Robert L. Novy, Detroit, chairman, Gustave L. McClellan, Detroit, Patrick L. Ledwidge, Detroit, Earl F.

Carr, Lansing, Samuel W. Donaldson, Ann Arbor, and Otto K. Engelke, Ann Arbor. The formation of the United Auto Workers C. I. O. committee had not been completed at the time of this report, but tentative plans indicated that George F. Addes, secretary-treasurer of the U. A. W.-C. I. O., will be ex officio chairman. The arrangement was worked out after an appeal had been submitted to the medical society by the union for a list of medical and surgical specialists who would accept patients referred by the union's own medical department.

MISSOURI

Personal—Robert Bruce Moffett, Ph.D., since 1941 post-doctorate research associate at Northwestern University, has been appointed senior research chemist in the laboratories of George A. Breon & Company, Kansas City.—Dr Richard E. Banner, Kansas City, has been named head of the health unit in Johnson County with headquarters at Warrensburg.

Grant to Finance Research in Caudal Anesthesia—The U. S. Public Health Service has made a grant to Washington University School of Medicine, St. Louis, to help finance a cooperative study of the gross anatomy of the spinal dura mater and the conformation of the posterior surface of the sacrum. The project is under the supervision of Mildred Trotter, Ph.D., and Dr Virginia S. Lanier of the department of anatomy and Dr Howard E. McKnight of the department of obstetrics and gynecology. It is anticipated that the results will be a contribution to the procedure of the administration of continuous caudal anesthesia in childbirth.

NEW JERSEY

State Department Creates Tuberculosis Division—The New Jersey State Department of Health has organized a division of tuberculosis to combat a sharp increase in the disease in the industrial areas. According to the Bulletin of the National Tuberculosis Association, 507 cases of tuberculosis have been found in 42,000 chest x-ray films taken in nine industrial areas of the state.

Industrial Physicians Wanted—The Department of Health of the State of New Jersey, Trenton, whose industrial health activities have expanded rapidly during the present war, has announced its need for two full time industrial hygiene physicians for its industrial hygiene service. The principal duties of the selected physicians will be consultations in regard to the control of occupational diseases, industrial toxicologic problems, evaluation of adequacy of plant medical services, promotion of measures which will reduce absenteeism from non-occupational causes, and conduct of industrial health education activities.

NEW YORK

Fifty Years of Practice—The *News Letter* of the Suffolk County Medical Society for September was dedicated to members who had completed a half century in the practice of medicine and who participated in a celebration in July. The members who were honored include Drs William Newton Barnhardt, Toronto, Ont., George Herbert Carter, Huntington, William Elliott Foster, Babylon, Frank Diah Peterson, Cutchogue, and Frank Overton, Patchogue.

Personal—Dr Theodore G. Klumpp, president of the Winthrop Chemical Company, has been elected a member of the Academia de Ciencias Medicas, Fisicas y Naturales de la Habana, Cuba. Presentation of the academy's medal will take place at a future date in Havana, where Dr Klumpp will go to deliver a scientific paper.—Dr Thomas M. Holmes, Delmar, has been appointed a member of the medical board of the State Employees Retirement System, succeeding Dr Clarence E. Mullens, Albany.

Dr Burton Simpson Retires from State Institute—Dr Burton T. Simpson, director of the State Institute for the Study of Malignant Diseases, Buffalo, retired on August 1 after having reached the compulsory retirement age. He had been in the service of the state since 1910, first as resident pathologist of the institute and since 1924 as its director. In 1931 he was appointed director of the newly created division of cancer control, combining the duties of that position with those of the administration of the institute. He continued until 1939, when the division was reorganized and its headquarters transferred to Albany, primarily to amplify the resources available to practicing physicians throughout the state for the diagnosis and care of cancer. Since then Dr Simpson has devoted full time to administering the institute. He was president of the American Society for the Control of Cancer in 1935.

PENNSYLVANIA

University Bulletin Honors Oldest Graduate—The *Pennsylvania Gazette*, official journal of the University of Pennsylvania, Philadelphia, paid special tribute in its September issue to Dr John A Fell, Doylestown, who is 93 years of age and the oldest living graduate of the university's medical school. Dr Fell graduated at the medical school in 1874. He is also the oldest living graduate of Lafayette College, which he attended two years before entering Pennsylvania. After graduating from the Doylestown English and Classical Seminary Dr Fell taught school for two years and was principal of the Hughesian Free School, Buckingham. He not only has served his community for many years as a practicing physician but also has been a member of the Doylestown School Board, the Doylestown Board of Health and at one time served as assistant surgeon of the Sixth Regiment of the Pennsylvania National Guard. In 1933 the state medical society paid tribute to him in recognition of his "fifty-nine years of medical service faithfully performed to his community in the traditional ideals of the medical profession."

Pittsburgh

Colonel Dabney Named Assistant Dean—Col Albert S Dabney, M. C., U. S. Army, assistant commandant of the Medical Field Service School at Carlisle Barracks, Pennsylvania, has been appointed assistant dean at the University of Pittsburgh School of Medicine, effective October 1. Colonel Dabney was relieved from his duties at Carlisle Barracks on August 31 in order to take advantage of accrued leave before being placed on the compulsory retirement list, November 30, at the age of 64. Col Guy B Dent, M. C., U. S. Army, who recently returned from a six months tour of duty as chief surgeon of a base section in the African theater of operation, will temporarily replace Colonel Dabney as assistant commandant at the field service school. A ceremonial retreat parade was held on August 31 in honor of Colonel Dabney, and Brig Gen. Addison D Davis, commanding general of Carlisle Barracks, commended Colonel Dabney for his loyal and efficient services. A veteran of two world wars and a medical officer for twenty-seven years, Colonel Dabney had been at Carlisle Barracks since June 27, 1939, first as director of the medical department equipment laboratory and on Jan. 10, 1942 as assistant commandant. Previous to his service at Carlisle Barracks he had been executive officer in the Surgeon General's Office at Washington, D. C.

SOUTH CAROLINA

Personal—Dr Luther A. Riser, Sedgefield, N. C., has been named director of the bureau of vital statistics of the state board of health to succeed Dr Martin B Woodward, Aiken, who resigned to accept a similar position in West Virginia.—A bronze bust of Dr Frank H McLeod, founder of the McLeod Infirmary at Florence, was recently presented to the infirmary to mark his many years' service to the community. Although not in practice, Dr McLeod still serves as medical superintendent of the infirmary.

Refresher Course—The Alumni Association refresher course of the Medical College of the State of South Carolina, Charleston, inaugurated last year, will be held November 3-4 at the Baruch Memorial Auditorium, Charleston. Speakers will be

- Dr Harrison F Flippin, Philadelphia. The Uses and Abuses of the Sulfonamides.
- Dr Charles C. Wolferth, Philadelphia. Differential Diagnosis of the Angular Syndrome.
- Dr Leroy U Gardner, Saranac Lake, N. Y. The Essentials of Pneumococcosis.
- Dr Alfred Blalock, Baltimore. Traumatic Shock.
- Dr Virgil P. W. Sydenstricker, Augusta, Ga. Deficiency Diseases.
- Dr George W. Thorn, Boston. Physiologic Considerations in the Treatment of Nephritis.
- Dr J. T. King, Washington, D. C., Calcific Aortic Stenosis.
- Dr Roy R. Kracke, Emory University, Ga. Diagnosis and Treatment of the Hemorrhagic Diseases.

There will be round table discussions on "The Sulfonamides," "Treatment of Heart Disease," "Pulmonary Diseases" and one on "Thyroid Disturbances." Surgical round table discussions will be held, as will pathologic conferences. At the founder's day banquet, Thursday evening, Dr Henry E. Meleney, New York, will discuss "Tropical Medicine, Present and Future."

Investigation of Medical Education and Medical Service Launched—The investigation of medical education and medical service in South Carolina started on August 25 in the senate chamber when a specially selected joint committee met to begin the taking of testimony. The committee is composed of Senators James E. Leppard, Chesterfield, chairman; O. T. Wallace, Charleston; and C. S. McCall, Marlboro. Representatives J. Claude Fort, Cherokee, and James B. Mor-

rison, Georgetown, and from the medical association Dr Walter R. Merd, Florence, and Dr William R. Wallace, Chester. Morning and afternoon sessions were held. It is expected that another meeting will be held in Charleston and probably a third in Columbia, after which a report will be made to the general assembly in January. The committee, under a resolution creating it, is to ascertain the cause of "present acute shortage of medical doctors and medical services in this state" and recommend "such measures as shall be necessary to procure and maintain an adequate supply and proper distribution of physicians and surgeons" and also to determine whether the state medical college in Charleston "should be enlarged so as to provide a sufficient supply of medical doctors to serve the needs of the state" and also whether a medical college should be established at the University of South Carolina. The committee is also to determine "whether it is necessary or desirable that the state should subsidize the cost" of educating medical students and whether it is necessary "for the state to provide in whole or in part public medical services." Among those appearing before the committee at this first meeting were Dr Robert Wilson, dean of the medical college of the state, Dr Kenneth M. Lynch, chairman of the state board of health and Dr Carl B. Epps of Sumter (THE JOURNAL, July 10, p. 757).

TENNESSEE

New Health Set Up in Nashville—Dr Thomas V. Woodring, assistant health officer of Nashville for more than fifteen years, has been appointed director of health of Nashville, a position recently created under a revision of the charter for the city. Dr John Overton will continue as city health officer. The creation of the position of director of health was a recommendation of the public administration service to obtain a better and more efficient government.

Personal—Mrs Dorothy Davis Bryan Nashville, has been appointed to succeed the late Dr Hale E. Cullom as director of sight conservation and prevention of blindness for the state of Tennessee.—New appointments to the Public Health Council include those of Dr Walker L. Rucks, Memphis, and Dr Thomas R. Ray, Shelbyville. Dr Rucks succeeds Dr Webster B. Key, who is now a lieutenant commander in the U. S. Naval Reserve.—Dr David Galloway, Memphis, has been appointed superintendent of the Western State Hospital.

WISCONSIN

Physician Named to New Veteran Recognition Board—Dr Charles A. Dawson, River Falls, has been appointed by Acting Governor Goodland as a member of the newly created Veteran Recognition Board. The state medical journal reports that the board will have charge of handling the \$6,300,000 earmarked by the legislature for the educational, medical and economic rehabilitation of World War II veterans of Wisconsin and their families, as well as any other state or federal funds set aside for such rehabilitation. Members of the board will receive no salary for their services but will be paid their expenses. A director and staff will be created to administer their funds, the staff to be under civil service.

The Dr William Beaumont Foundation—At the first meeting of the Dr William Beaumont Memorial Foundation in Prairie du Chien, September 18, Dr William D. Stovall, Madison, director of the state laboratory of hygiene, was elected chairman of the board of directors and M. J. Dyrud, Prairie du Chien, was chosen president. The foundation was incorporated in May and its purpose is to perpetuate the name and memory of Dr Beaumont and his memorable experiments in the physiology of digestion, and to recognize noteworthy contributions made by other physicians and surgeons of the United States. Organization of the foundation was planned and carried through by the Crawford County Medical Society and the local Kiwanis club. Other officers include Dr Olaf E. Satter, vice president, Dr Thomas F. Farrell, treasurer and J. Alvin Druyor, secretary, all of Prairie du Chien. Other members of the board of directors are Mayor F. W. Clanton, F. A. Otto and Paul H. Schmidt, all of Prairie du Chien. Walter J. Meek, Ph.D., acting dean of the University of Wisconsin Medical School, Madison, was appointed chairman of the advisory board by the directors at their meeting after the membership meeting. Other appointments made by the board of directors were Cal Peters, curator; Dr Peter L. Scanlan, Dr Henry H. Kleinpell, Dr John J. Kane, Dr Charles A. Armstrong and Dr Emil H. Leichtenberg, medical advisers to the curator, and Mr Dyrud, general manager. The first meeting of the new foundation was held in the hospital section of the second Fort Crawford built in 1829 in which Dr Beaumont served as post surgeon under Col. Zachary Taylor then commandant at the fort. This building which is now owned by

the city of Prairie du Chien and leased by the D A R, is being considered as the home of the foundation. Tentative plans call for the restoration of the building to its original state as it was when Dr Beaumont was in charge. Dr Beaumont performed fifty-six of his noted experiments on Alexis St Martin in the hospital section of Fort Crawford between 1826 and 1832. A number of important books and papers of Dr Beaumont's are available in Prairie du Chien and will be turned over to the foundation when it has a suitable home.

GENERAL

Better Parenthood Week—The sixth annual Better Parenthood Week will be observed nationally, October 25-31. Parent-teacher, child care, welfare and various civic organizations and study groups will cooperate through programs dealing with parent and child care problems, especially those which confront the nation during wartime.

International Medical Assembly—The twenty-eighth annual International Medical Assembly of the Inter-State Postgraduate Medical Association of North America will be held at the Palmer House, Chicago, October 26-29, under the presidency of Dr Frank H Lahey, Boston. Among the speakers will be

Dr Edmund B Sprath, Philadelphia, Removal of Metallic Foreign Bodies from the Eyeball and from the Orbit
Dr James L. Poppen, Boston, The Management of Ruptured Inter-vertebral Disks
Dr George B Eusterman, Rochester, Minn., The Treatment of Gastric and Duodenal Ulcer
Dr Fraser B Gurd, Montreal, Canada, Treatment of Burns
William H Headlee, Ph D, Indianapolis, Precautions Against the Introduction of Tropical Diseases into the United States
Dr Major G Seelig, St Louis, The Talcum Problem in Surgery and Its Solution

At the assembly dinner Dr Lahey will discuss "Some of the Problems of the War" and Brig Gen Fred W Rankin, M R C, "Current Considerations of Postgraduate Medical Education."

Dearholt Medal Awarded—Will Ross, president of Will Ross, Inc, Milwaukee, was presented on September 8 with the Dearholt Medal awarded annually by the Mississippi Valley Conference on Tuberculosis. The medal is awarded for outstanding work and service in combating tuberculosis. Mr Ross was a patient in a sanatorium founded by the late Dr Hoyt E Dearholt, for whom the medal is named, and in 1911 published a book titled "My Personal Experience with Tuberculosis." New officers of the Mississippi Valley Conference include Mrs Blanche H de Koning, executive secretary of the Grand Rapids Anti-Tuberculosis Society, Grand Rapids, Mich, president, Dr Robert H Hayes, Chicago, a member of the board of directors of the Tuberculosis Institute of Chicago and Cook County, vice president, and A W Jones, executive director of the St Louis Tuberculosis and Health Society, St Louis, secretary-treasurer. Officers of the Mississippi Valley Trudeau Society, which met jointly with the conference, are Dr Loren L Collins, Ottawa, Ill, president-elect, Dr Henry S K Willis, Northville, Mich, president, Dr Oscar Lotz, Milwaukee, vice president, and John H Scavlem, Cincinnati, secretary-treasurer.

American Public Health Association—The seventy-second annual business meeting of the American Public Health Association and its wartime public health conference will be held at the Hotel Pennsylvania, New York, October 11-14. An extensive program has been prepared covering public health and including general sessions and section meetings. A special session will be held Tuesday afternoon on "New Ventures Toward Health Security," at which the speakers will include Nathan Sinai, DPH, Ann Arbor, Dr John J Heagerty, Ottawa, Ont, and Homer Folks, LL D, New York. "Latin America Looks Toward the Future" will be discussed by a speaker to be announced later. A second special session will be held Wednesday on "Public Health Implications of Tropical and Imported Diseases" at which the speakers will be Dr Henry E Meleney, New York, Dr Wilbur A Sawyer, New York, Surg Gen Thomas Parran of the U S Public Health Service, and one other to be announced later. On Wednesday afternoon a special session will be devoted to "Current Health Department Problems in War," the panel leader to be Dr Huntington Williams, Baltimore. Thursday a special session will be devoted to "The Evolving Pattern of Tomorrow's Health," the speakers to be Dr Joseph W Mountin, Washington, D C, Dr William P Shepard, San Francisco, C-E A Winslow, Dr PH, New Haven, Conn, Henry F Vaughan, Dr PH, Ann Arbor, and Dr Felix Hurtado. Other features at the meeting will include symposiums on cancer, on the impact of the war on sanitary engineering, the recent

developments in sanitary engineering, postwar opportunities and responsibilities of the sanitary engineer and on gonorrhea. Other speakers will include

Selman A Waksman, Ph D, New Brunswick, N J, Antibiotic Substances: Production by Micro-Organisms, Nature and Mode of Action
Colonel Edgar Erskine Hume, M C, U S Army, The Problem of Rickettsial Diseases Among the Armed Forces
Dr Felix J Underwood, Jackson, Miss, Planning Today for Public Health Administration Tomorrow
Dr Carl A Wilzbach, Cincinnati, Results of Medical and Dental Examinations of 2,500 Senior High School Students
George R Cowgill, Ph D, New Haven, Conn, Nutrition—A Factor Important for Industrial Hygiene
Dr Frank G Boudreau, New York, Food and Nutrition Policy Here and Abroad

Other groups meeting at this time will include the American School Health Association, the American Social Hygiene Association and on Monday an inter-American conference on health education.

Academy of Ophthalmology and Otolaryngology—The annual session of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 10-13, under the presidency of Dr James A Babbitt, Philadelphia. Among the speakers will be

Dr Harry S Gradle, Chicago, A Program of Ophthalmic Service for Small Plants
Dr Alton E Braley, New York, Epidemic Keratoconjunctivitis: Results of Therapy
Dr Walter B Lancaster, Boston, The Present Status of Eye Exercises for Improving Visual Functions
Dr William F Hughes Jr, Baltimore, Chemical Burns of the Eyes
Dr Robert Von Der Heydt, Chicago, A Clear Corneal Implant Acquires Dystrophy from Its Host
Olof Larzell, Sc D, Portland, Edward McCrady Jr, Ph D, Seawane, Tenn, and Dr John F Larzell, The Development of the Organ of Corti in Relation to the Inception of Hearing
Dr Anderson C Hilding, Duluth, Minn, The Role of Ciliary Action in Production of Pulmonary Atelectasis and Vacuum in Sinuses
Dr Stuart C Cullen, Iowa City, Anesthesia in Otolaryngology

On Sunday a feature will be a symposium on "Seeing, Hearing, Thinking and Doing—A Problem of American Youth," presented by Drs Joseph E Raycroft, Princeton, N J, Albert D Ruedemann, Cleveland, and Albert C Furstenberg, Ann Arbor, Mich. Sunday evening there will be the fourth annual symposium on orthoptics conducted by the American Association of Orthoptic Technicians. In addition to the scientific papers there will be a series of conference periods for members of the academy, continuance courses and a series of motion picture films.

FOREIGN

Social Security in New Zealand—New Zealand's ambitious social security setup is costing the government only one-third the sum expected, Health Minister Arthur H Nordmeyer, chairman of the House of Representatives committee which first endorsed the plan five years ago, declared in a review of the first four years of its operations. Before the social security plan went into gear New Zealand was paying out around \$23,000,000, at current exchange rates, in yearly pensions. All these except war pensions are now a liability of the social security fund. In addition, that fund now pays out bonuses to industry under employment promotion plans, and benefits to unemployed, according to the *New York Times*. The *Times* stated that the principal field in which social security has exceeded expected costs is that in which the government has warned it would do so—the hospital field. New Zealand has the habit of putting sick soldiers into nonmilitary hospitals, which has added to the strain and helped raise costs at the expense of owners of real estate, on which local government taxes are raised to meet one third of the annual charges. Another third is met by a national government grant from general taxation, and the remaining third, or rather less, from the social security fund, it was stated. The *Times* further reported that this practice might be thought to obscure the results of the social security plan in its public health aspects. According to the report "Dr John Cairney, medical superintendent of Wellington Hospital, stated eighteen months ago that 'even without military patients all beds and facilities would be taken up by patients on the long waiting list.' The fact is that the health plan has never operated fully since it was started owing to the shortage of doctors and hospital accommodations, and government spokesmen have admitted that wartime pressure has kept down its cost. Shortage of physicians has also kept family doctors from doing the tremendous business which was expected when medical consultation became free. Shortage of materials and labor has helped keep down hospital costs, high as these are today. Minister Nordmeyer recently told the government newspaper the *Standard* that 'during the depression many hospitals allowed building programs to fall behind, and when faced with the need for emergency accommodations for the civilian population they found themselves suddenly committed to quite extensive alterations and additions.'"

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug 13, 1943

Functional Diseases of the Colon and Rectum

Opening a discussion on functional diseases of the colon and rectum at the Section of Proctology of the Royal Society of Medicine, Sir Arthur Hurst said that the conditioned reflex which led to regular morning defecation might begin in the education of the infant and develop in such a way that the normal individual as he got older did not think about it at all. The most common cause of constipation, especially in women, was neglect of the normal call to defecate. If not acted on, the muscular wall of the rectum relaxed and the desire disappeared and did not return until the next quantity of feces passed into the rectum. With persistent neglect of the call the rectum became completely relaxed and distended. Well over half the cases of constipation were due not to any deficiency in the activity of the colon but to interference with the reflex. Another large group of people imagined themselves constipated when they were not. Many would report that they had a liquid stool and for years had not passed a solid one. They had been taking the aperients which figured so largely in advertisements. The symptoms of auto-intoxication were not produced by constipation but by the diarrhea due to the aperients taken. Another cause of upset of normal bowel activity was the procedure common some years ago and now revived—not the old fashioned Plombières douche but successive washings by one pipe after another, taking perhaps a couple of hours, in the vain expectation that eventually clear water would be returned. The procedure ignored the physiologic fact that feces were constantly coming down and mixing with the water. Mucus could be regarded as significant of a pathologic condition only if present with spontaneous diarrhea. With a loose stool caused by an aperient it was merely a protective secretion and of no importance. Mucous colitis was an imaginary complaint based on a wrong diagnosis, it was due to the idea that the presence of mucus was itself significant of disease.

The taking of aperients was the commonest cause of the low abdominal pain associated with spasm. But when such conditions as real ulcerative colitis and diverticulitis were excluded there remained a small number of cases in which colon spasm was the primary thing—a condition corresponding in some ways to asthma and not easy to diagnose or treat. He warned strongly against x-ray examination as a method of diagnosis.

Hurst finally mentioned paroxysmal proctalagia, first described as rectal crises of nontabetic origin. At intervals the patient had severe pain, always perineal, not at the anus but apparently 3 or 4 inches up the rectum. Usually it departed spontaneously after ten to fifteen minutes. It was not associated with any particular condition of the bowel but often with sexual activity. It was almost certainly due to a muscular contraction, probably at the junction of the pelvic colon and rectum. Physicians who were patients had obtained relief by having an enema syringe at their bedsides and blowing air up into the rectum.

Leprosy in the British Empire Today

At the annual meeting of the British Empire Relief Association the incidence of leprosy in Nigeria was reported to be high, the cases being estimated at over 200,000. In northern Rhodesia the work started there by certain missionary societies on lines suggested by Dr Ernest Muir, medical secretary of the association, had been satisfactory. In a medical address Major General Sir Cuthbert Sprawson reviewed the progress made during the nineteen years since the foundation of the association. He contrasted the leprosy asylum in India then

with that of today. The care of patients had greatly improved, the scientific classification of cases, their laboratory investigation and efficient treatment were now matters of routine. Patients were kept usefully employed and the atmosphere was one of hope, stimulated by the sight of many leaving the hospital fit to return to the outside world. The improvements in treatment included Rogers's introduction of active derivatives from the oil of various species of *Hydnocarpus* seeds, better method of educating the native population in the disease and the proper mode of living for those who had contracted the disease, and increased knowledge of nutrition, malnutrition being a predisposing cause. The purely laboratory side of research on the whole yielded disappointing results, but the new leprolin and the iodide test had proved of value. More leprosy settlements and clinics were required, also separate institutions for those who had passed through the contagious stage but were too old and feeble to work. They occupied room in hospitals which was required for cases needing more urgent treatment.

Filling the Gaps in Medical Libraries After the War

In a letter to the *Times* C. C. Barnard, librarian of the London School of Hygiene and Tropical Medicine, describes the position of learned and scientific libraries as faced with the problem of attempting to fill gaps in their sets of periodicals due to the war. As stocks in European countries may also have suffered there may not be sufficient copies to go round. To prevent an unseemly scramble by the libraries for the available copies it is desirable that a representative and impartial body should decide, on a national scale, to which institutions the available copies should be allotted. This allocation should form part of a much larger scheme whereby the present holdings of learned periodicals in all libraries would be surveyed and, where necessary, redistributed in the interest of research. The obvious body to do this is the Library Association, though the actual work might be most economically done at the National Central Library. Not until this task is completed will it be possible to compile a satisfactory union catalogue of periodicals in British libraries.

Friendly Societies and the Beveridge Scheme

In previous letters the views of the medical profession have been given regarding the Beveridge scheme. As a result of what is described as a successful and profitable meeting with members of Parliament, the National Council of Friendly Societies announces the fundamentals on which it would be willing to collaborate. The following five essentials have been tabulated and are in the hands of the government ministers concerned. 1 The scheme must be susceptible of responsible administration by friendly societies. 2 It must provide for effective self government by members of the society. 3 The rates of benefits and contributions must be such as to allow a reasonable margin for voluntary insurance. 4 There must be direct contact between societies and the insured population. 5 Medical certificates must be issued free of charge to insured persons.

First Aid for Fractured Spine

Some difference of opinion has been expressed as to whether a person suspected to be suffering from fracture of the spine should be carried in the prone position. The question of first aid in such cases has been submitted to the British Orthopedic Association. After discussion at the last meeting the following opinion was given: "The executive committee decided to give authoritative support to the view that patients with suspected spinal fracture should be shifted and moved in such a way as not to be folded either backward or forward. The patient should be disturbed as little as possible, being transported as he lies. From the point of view of the spinal injury we are of the opinion that there is no indication for change of position from face to back or vice versa."

Deaths

William Fessenden Wesselhoeft, Jaffrey, N H, Harvard Medical School, Boston, 1887, formerly professor of clinical surgery at the Boston University School of Medicine, fellow of the American College of Surgeons and a member of the Boston Surgical Society, served in France as a lieutenant colonel and as a commanding officer of Base Hospital number 44 during World War I, introduced a new surgical knot and devised a method of sterilizing catgut that was long in use at the Massachusetts Memorial Hospitals, Boston, consulting surgeon to the Memorial Hospitals, where he at one time worked his way through the grades to the position of surgeon, and where he died, June 27, aged 81, of arteriosclerosis and chronic myocarditis

Edward William Jones ♂ Mitchell, S D, Northwestern University Medical School, Chicago, 1906, past president of the South Dakota State Medical Association and the Mitchell District Medical Society, served overseas as a captain in the medical corps of the U S Army during World War I, coordinator of Civilian Defense and examining physician for the Selective Service Board of Davison County, on the staffs of the Methodist State and St Joseph hospitals, for many years examining physician for the Milwaukee Railroad, treasurer of the city library board, aged 64, died, July 5, of coronary occlusion

Harland W Long, Mattoon, Ill, Missouri Medical College, St Louis, 1898, University and Bellevue Hospital Medical College, New York, 1904, member of the Illinois State Medical Society and the American Psychiatric Association, veteran of the Spanish-American and World wars, received a medal from the French government for his fight against an epidemic of influenza, formerly associated with the U S Veterans Bureau, Pittsburgh, and on the staff of the Veterans Administration Facility in Aspinwall, Pa, aged 73, died, July 18, of myocardosis

Stoddard Linnaeus Anderson, De Kalb, Ill, Rush Medical College, Chicago, 1896, member of the Illinois State Medical Society, member of the draft board, on the staffs of the De Kalb Public and St Mary's hospitals, De Kalb, and the Sycamore (Ill) Municipal Hospital, aged 67, died, July 10, in Chicago of diverticulitis of the sigmoid

Stephen Victor Balderston ♂ Evanston, Ill, University of Pennsylvania Department of Medicine, Philadelphia, 1895, associate in medicine at the Northwestern University Medical School, Chicago, specialist certified by the American Board of Internal Medicine, served in the medical corps of the U S Army during World War I, health commissioner of Evanston from 1907 to 1914, for many years on the staff of the Evanston Hospital, aged 74, died, July 11, of coronary occlusion

Mack W Ball, New Bern, N C, Atlanta (Ga) School of Medicine, 1909, aged 75, died, July 6, in the Duke Hospital, Durham, of angina pectoris

Sydney Elon Bateman, Mifflinburg, Pa, Medico-Chirurgical College of Philadelphia, 1904, formerly a Lutheran minister, served as a major in the medical corps of the U S Army during World War I, aged 79, formerly adjunct professor of histology and embryology at the Temple University School of Medicine, Philadelphia, died, July 7, in the Geisinger Memorial Hospital, Danville, of acute cholelithiasis, uremia and coronary occlusion

Everett Charles Beach, Oxnard, Calif, Baltimore Medical College, 1907, member of the California Medical Association, formerly supervisor of physical education in the city schools of Los Angeles and at one time director of physical education in the summer school at the University of California, Berkeley, on the staff of St John's Hospital, aged 63, died, July 8, in the California Hospital, Los Angeles, of brain tumor

Harold Kohli Begg ♂ Cleveland, Northwestern University Medical School, Chicago, 1918, for many years physician for the Rams and Barons, professional football and hockey teams, aged 48, died, July 13, in the Huron Road Hospital of virus pneumonia following a thyroid operation

Theodore S Blakesley ♂ Kansas City, Mo, Rush Medical College, Chicago, 1902, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology, served during World War I, member of the staffs of the Trinity Lutheran, St Luke's, St Joseph, Research and the Kansas City General hospitals, aged 65, died, July 14, in Columbus, Ohio, of coronary occlusion

Charles James Carden, Tewksbury, Mass, Harvard Medical School, Boston, 1896, member of the Massachusetts Medical Society, served as a major in the medical corps of the U S Army during World War I, formerly on the staff of the Tewksbury State Hospital and Infirmary as assistant physician, aged 70, died, July 4, of arteriosclerotic heart disease, lobar pneumonia and diabetes mellitus

Douglas Aymar Cater ♂ East Orange, N J, Columbia University College of Physicians and Surgeons, New York, 1896, fellow of the American College of Surgeons, consulting physical therapist and formerly senior member of the staff of the Orange Memorial Hospital, aged 73, died, July 13, of coronary thrombosis and arteriosclerosis

Andrew D Clark ♂ Adrian, Mich, Illinois Medical College, Chicago, 1910, aged 70, died, July 2, of heart disease

R Garn Clark, Provo, Utah, College of Physicians and Surgeons, Baltimore, 1904, member of the Utah State Medical Association, served for two years as mayor of Richfield, at one time medical director of the Richfield General Hospital, aged 66, died, July 8, in the Utah Valley Hospital of coronary occlusion

John Hamilton Cooper, Massillon, Ohio, University of Pittsburgh School of Medicine, 1913, also a pharmacist, member of the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Otolaryngology, on the staff of the Massillon State Hospital, aged 61, died, July 15

Isham E Cottingham, Evansville, Ind, University of Louisville (Ky) Medical Department, 1879, Bellevue Hospital Medical College, New York, 1881, member of the Indiana State Medical Association, aged 85, died in the Welborn-Walker Hospital, July 9, of heart disease

William Edward Cramm, Mansfield Center, Conn, University of Vermont College of Medicine, Burlington, 1895, served in the medical corps of the U S Army during World War I and as a captain in the medical reserve corps not on active duty, health officer of Mansfield for many years, a member of the visiting staff of the Windham Community Memorial Hospital, Willimantic, one of the founders and first president of the Mansfield Center Library, aged 73, died, July 7, of generalized abdominal carcinoma

James Edward Daley, Porterville, Calif, California Medical College, San Francisco, 1895, aged 72, died, July 3, in a San Francisco hospital of paralysis of the throat and auricular fibrillation

Edgar Childes Dawson, Niles, Calif, University of California Medical School, San Francisco, 1932, served on the staff of the Alameda Hospital, aged 35, died at Mount Eden, July 7, of multiple sclerosis

Thomas J Draper, Warrensburg, Mo, University Medical College of Kansas City, Mo, 1894, served as public health officer of Johnson County, aged 87, formerly on the staff of the Warrensburg Clinic, where he died, July 6, of an infection of the bladder

Austin Ray Edwards, Sidney, Ohio, Ohio State University College of Medicine, Columbus, 1916, member of the Ohio State Medical Association, served overseas during World War I, formerly coroner, on the staff of the Wilson Memorial Hospital, aged 55, died, July 10, of congestive heart disease.

Roland A Felt, Virginia, Ill, Barnes Medical College, St Louis, 1899 and 1909, member of the Illinois State Medical Society, served in the medical corps of the U S Army during World War I, on the staffs of the Passavant Memorial and Our Saviour's hospitals, Jacksonville, aged 66, died, July 9, in St John's Hospital, Springfield, of right pyelonephritis and urinary sepsis

James Hudson Fiscus ♂ Greensburg, Pa, University of Maryland School of Medicine, Baltimore, 1910, served as a captain in the medical corps of the British army during World War I, dermatologist on the staff of the Westmoreland Hospital, aged 58, died, July 4, of acute myocarditis

Edward James Fitzgibbon, Boston, Harvard Medical School, Boston, 1904, formerly associated with the U S Veterans Bureau, aged 79, died in the United States Naval Hospital, Chelsea, Mass, July 12

Tilden P Fowler, Harrison, Ark (licensed in Arkansas in 1903), member of the Arkansas Medical Society, aged 66, died, July 4, of cerebral hemorrhage

Louis Morris Green, Maywood, Ill, University of Illinois College of Medicine, Chicago, 1912, examining physician for the Baltimore and Ohio Railroad, served during World War

aged 62 died in the Veterans Administration Facility, July 18 of chronic myocarditis, myocardial degeneration and cerebral arteriosclerosis

Theodore Laurence Gregg, Lewisburg, Ohio, Eclectic Medical Institute, Cincinnati, 1897, aged 68, died, July 21, in Los Angeles of cerebral hemorrhage

Edward William Grosser, Chicago, Chicago Homeopathic Medical College, 1901, Rush Medical College, Chicago, 1902, Hahnemann Medical College and Hospital, Chicago, 1905, 69 died, July 24, of chronic myocarditis and operation carcinoma of the left kidney

Benjamin Franklin Gumbiner, Gary, Ind., Rush Medical College, Chicago, 1920, member of the Indiana State Medical Association, aged 47, on the staffs of St. Mary's Mercy and Methodist Hospital, where he died, July 17, of pulmonary infection

Charles Joseph Hart Ⓢ New York, University and Bellevue Hospital Medical College, New York, 1921, director of x-ray department of the Wickersham Hospital, aged 43, in the Rutland (Vt.) Hospital July 13, of acute dilatation of the heart following radical sinus operation

Emil Frank Hartung, Rockville Centre, N. Y., Long Island College Hospital, Brooklyn 1884, at one time coroner's physician in Brooklyn member of the draft exemption board during World War I, formerly on the staff of the Trinity Hospital Brooklyn aged 81 died July 17 of senility

Stanley Morton King Ⓢ Brooklyn Albany Medical College, 1915 specialist certified by the American Board of Otolaryngology, served as a captain in the medical corps of the U. S. Army during World War I, aged 52 a member of the staffs of the New York Eye and Ear Infirmary, New York, and the Methodist Hospital, where he died July 27 of sarcoma of the kidney

Alfred Coleman Kinney Ⓢ Seaview, Wash. Bellevue Hospital Medical College, New York, 1872 an Affiliate Fellow of the American Medical Association member, the founder and the first and fiftieth president of the Oregon State Medical Society, one of the first members of the Oregon State Board of Health, mayor of Astoria, Ore., from 1894 to 1896 in 1938 received the honorary degree of doctor of laws from the Linfield College McMinnville, Ore., aged 93 died, July 13 in St. Vincent's Hospital, Portland, Ore.

Frank Ambrose Lagorio, Chicago Northwestern University Medical School Chicago, 1911, member of the Illinois State Medical Society, for many years chief physician of the Illinois Athletic Commission a member of the board of the Chicago Public Library and head of the Chicago Pasteur Institute, on the staffs of the Columbus and Cuneo hospitals aged 58, died suddenly in Winnetka, Ill., July 18, of coronary thrombosis

Nathan Lane, Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1902, member of the Medical Society of the State of New York, aged 58, died in the Harkness Pavilion of the Presbyterian Hospital, New York, July 18 of chordoma

Robert Leroy Leighton Ⓢ Spring Lake, N. J. Hahnemann Medical College and Hospital of Philadelphia, 1913, served overseas as a captain in the medical corps of the U. S. Army during World War I member of the borough council of Spring Lake, on the staff and member of the board of governors of the Fitkin Memorial Hospital, Neptune, aged 53, died July 5, of bronchogenic carcinoma

Charles P. Leuthart, New Albany, Ind., Kentucky School of Medicine, Louisville, 1901 member of the Indiana State Medical Association, for many years secretary of the Floyd County Board of Health, aged 70 died, July 16 of prostatism and myocarditis

Gustav Edward Liebrecht, Chicago, National Medical University, Chicago 1906 veteran of the Spanish-American War, on the staff of the Lutheran Deaconess Home and Hospital, aged 72, died July 26 of chronic myocarditis

Frank Ford McDede Ⓢ Paterson N. J., College of Physicians and Surgeons Baltimore 1901, served as a captain in

the medical corps of the U. S. Army during World War I, examining physician for the Selective Service System, aged 75, on the staff of St. Joseph Hospital, where he died, July 9, of intestinal obstruction

Stanley Willis Osgood, Clawson, Mich., Detroit College of Medicine and Surgery, 1931, member of the Michigan State Medical Society, commissioned as a captain in the medical corps, Army of the United States, in September 1942 and relieved from active duty on account of physical disability in March 1943, served on the staffs of Mount Carmel Mercy Hospital, Detroit, and St. Joseph Mercy Hospital, Pontiac, aged 37, died, July 21, of carcinoma of the thyroid

John Breckenridge Overall, Springfield, Ky., Louisville Medical College, 1892, member of the Kentucky State Medical Association, served during World War I, major in the medical reserve corps not on active duty, mayor of Springfield, charter member of the Rotary Club and a member of the board of directors of the Springfield State Bank, aged 74, died, July 1, of cerebral hemorrhage

William Gerard Paradis Ⓢ Crookston, Minn., University of Minnesota Medical School, Minneapolis, 1926, past president of the Minnesota Sanatorium Association and the Red River Valley Medical Society, fellow of the American College of Chest Physicians, member of the staffs of St. Vincent's and Bethesda hospitals, medical director and superintendent of the Sunny Rest Sanatorium, where he died, July 7, of coronary thrombosis

Thomas Francis Patterson, Brooklyn Long Island College Hospital, Brooklyn, 1896, member of the Medical Society of the State of New York aged 71, died, July 24

Benjamin William Peck, Burnsville, W. Va. Maryland Medical College, Baltimore 1905 aged 69, died, July 8 of nephritis

William Peters, Nicasio, Calif., College of Physicians and Surgeons of San Francisco, 1900 formerly on the staff of the Franklin Hospital San Francisco, aged 69, died, July 2, of heart block

Samuel Benjamin Pond, Patton, Calif., University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1907 member of the California Medical Association and the American Psychiatric Association, on the staff of the Patton State Hospital formerly on the staff of the Middletown (N. Y.) State Homeopathic Hospital, aged 60, died in St. Bernardine's Hospital San Bernardino, July 20 of cerebral embolus following a prostatectomy

Dallas Case Ragland, Los Angeles, Washington University School of Medicine St. Louis, 1907 formerly professor of pathology and hygiene at the College of Physicians and Surgeons aged 58, died July 10, of cerebral hemorrhage

Charles Henry Reinhardt, Chicago, University of Illinois College of Medicine Chicago, 1915, served during World War I, aged 51, died July 25 in the Wesley Memorial Hospital of carcinoma of the lung

Hugo August John Siebeneichen, New York University and Bellevue Hospital Medical College, New York, 1916, for many years diagnostician for the department of health, aged 49 died, July 22, of coronary occlusion

James F. Waltz Ⓢ Capac, Mich. Detroit College of Medicine 1907, served during World War I president of the village of Capac, 1931-1932 on the staffs of the Bishop Hospital, Almont Harper Hospital Detroit, and Port Huron (Mich.) Hospital aged 57 died, June 24 of coronary occlusion

KILLED IN ACTION

Walter Wytowich, Detroit Wayne University College of Medicine, Detroit 1941, served on the staff of the Grace Hospital commissioned a first lieutenant in the medical corps of the Army of the United States in March 1942, received the Purple Heart aged 27 was killed in action in the North African area July 11



LIEUT. WALTER WYTOWICH
1916-1943

ST. LOUIS PUBLIC LIBRARY

St. L. Medical College

Vitagen—College Laboratories, Inc., Denver Shipped April 22 1941 Composition approximately 70 per cent deficient in vitamin A and 50 per cent deficient in vitamin C, from figures claimed on label Adulterated because valuable constituents namely vitamins A and C had been wholly or partly omitted or abstracted therefrom Misbranded because statements, two terpenoids of Vitagen contains approximately 2 810 international units of A 450 units of C, were false and misleading when applied to an article of lower vitamin content—[D D N J F D C 679 February 1943]

West Point Hair Tonic—Associated Brands Inc Brooklyn Shipped Jan 22, 1941 Composition essentially alcohol, water, castor oil benzyl benzoate and benzoin Misbranded because of false and misleading statements (on carton), 'Natural Vegetable Oil Hair Tonic' West Point Hair Tonic wakes up tight lazy curls and brings new life to hair For Thinning Hair Teach the children to use West Point Hair Tonic. It will insure their having healthy beautiful hair when they grow older,' and (on label) 'Natural Vegetable Oil Hair Tonic.'—[D D N J F D C 585 November 1942]

Zalco Septile—Sylvia Zalk trading as Zalco Company St Paul Shipped between Feb 1 and Sept 25 1940 Composition essentially water alcohol and small amounts of menthol, eucalyptol thymol methyl salicylate and boric acid Misbranded because when used in the dilutions recommended it was not an antiseptic for feminine hygiene—[D D N J F D C 630 February 1943]

SOME MISCELLANEOUS MEDICAL FRAUDS

A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL Following are brief abstracts of some fraud orders not dealt with previously

E J Stevens New Age Book and Supply House and New Age Company—In this department of THE JOURNAL, Nov 8, 1941, page 1642, there was reviewed the record up to that date, of Ernest J Stevens of San Francisco including a Post Office fraud order issued May 17 1941, against a long list of trade styles under which Stevens had operated. Among these were Stevens Helio-Scientific Company The Rainbow Publishing Company E J Stevens Publishing Company and The E J Stevens Color Institute. The article concluded with this paragraph

As in many similar cases the flaw in this fraud order lay in the omission of Stevens personal name and so like some others whose schemes have been debarred from the mails he flouted the government and continued in business—by, operating under a new trade style and local address, Chromolux Company Stratford Hotel San Francisco His device also took on a new name Chromolux Lamp His explanation to those on his mailing list was that his companies had been reorganized. But this trick was soon detected by the Post Office Department which on July 12 1941 issued a supplemental fraud order covering not only the name of Stevens himself but also the Chromolux Company Lux Stevens and a good many other trade styles old and new under which he had been operating But Stevens is not the kind of person to let a few fraud orders or other government ukases stand in the way of his financial success, and so he simply dropped his old trade styles and adopted fresh ones namely, New Age Company and

New Age Book and Supply House, and the business of promoting his normalizer went merrily on for a while. With it was advertised a manual entitled True Chromo Therapy which was represented to contain color-energy treatments for scores of diseases. This was reported by the Post Office Department to be the same manual which was involved in the earlier case against Stevens when it was found to contain false and fraudulent claims for the treatment of disease by the Stevens devices. When it became evident to the Post Office Department that the trade styles New Age Book and Supply House New Age Company and E J Stevens, M.Sc. Ph.D. were names under which Stevens was continuing to promote his scheme, a supplemental fraud order was issued against these titles on Feb 15 1943

Holder's H F Condensator Company Holder's Research Laboratories "W E Holder MD 'Dr D O Crowe, DMT' and others.—These concerns and persons whose addresses were given variously as Detroit and Windsor Ontario, Canada promoted through the mails a device called at different times Holder's H F Condensator Holder's Ultra Short Wave Condensator and Holder's Ultra Short Wave H F Condensator The moving spirit in the scheme was a William E. Holder who formerly had advertised and sold through the mails a rubber chair cushion containing an electrical heating unit represented as a curative agency for a large number of serious diseases and other ailments The operation of that scheme through the mails resulted in the issuance of a Post Office fraud order on Dec. 23 1938 which closed the mails to Holder and others as reported in this department of THE JOURNAL Sept. 9 1939 page 1051 Thereafter it appears Holder deemed Canada a more propitious place for his activities and set up his new enterprise in Windsor later opening an agency in Detroit which was run by D O Crowe. Holder promoted his condensator in certain publications circulating through the mails. In one advertisement he addressed his message to so-called incurables suffering from asthma bronchitis sinusitis

hay fever, colds mastoid and throat troubles arthritis and all rheumatic conditions paralysis spinal troubles, neurasthenia stomach disorders, prostate kidney and bladder trouble women's weaknesses eye ailments including cataract and glaucoma, etc., who have endeavored in vain to obtain relief Getting down to business, his advertisement went on to say: "Such sufferers need not despair for that internationally known miracle machine, Holder's Ultra Short Wave H F Condensator (not diathermy) generating fluid electricity with cellular massage is now being manufactured in Detroit so that United States physicians can give this wonderful treatment to aid sufferers in their recovery to good health Endorsed by the British Minister of Labor and advertised by the British Ministry of Health as the successful treatment for colds hay fever and sinus trouble Inquirers received a printed form letter together with various so-called physicians case history reports a 32 page booklet on the condensator and other material The booklet contained such claims as All bacteria free illnesses are simply electrical unbalance. All drugs used for curative purposes must ultimately depend upon their electrical qualifications Pain is the result of electric unbalance Knowing these features I came to the conclusion that to balance the electrical potential in the human body it would be necessary to produce a machine which would embody the essential features necessary The booklet went on to explain that these features were '(1) To produce a current with immense oscillations (2) A current which would be germicidal and have nutritional value (3) A current of extremely high voltage (4) A current of very low amperage. (5) A current with open circuit or spark gap to produce a damped field of electronic condensation (This cannot be done otherwise.)' Also in the booklet was the promoter's claim that the ultra short wave current which is generated in my condensator now is of a 3 meters wave length or 100,000,000 oscillations per second 50,000 volts intake, 2 amps or 200 milliamperes" Further, there were numerous testimonials and statements alleged to have come from physicians reporting the supposed cures of a wide variety of disorders such as blood poisoning paresis, infantile paralysis, cancer, including inoperable stomach cancer, liver tumor epilepsy diabetes pyorrhea black widow spider bite varicose veins cirrhosis of the liver exophthalmic goiter, mental diseases obesity impotence, high blood pressure and many others The only condition which the literature admitted Holder's Therapy would not remedy was abnormality of spine—whatever that may be The device sold for \$365 and, though Holder contended that it was distributed only to physicians the Post Office inspector declared that test cases that he had conducted had shown that anyone who would send the required amount would be supplied with a condensator On Aug 24 1942 the Post Office Department directed the persons and concerns in question to show cause on September 21 of that year why a fraud order should not be issued against them At the hearing which had been postponed to October 7 an attorney appeared for the respondents There was produced in evidence a specimen of Holder's device, and examination showed that it consisted of a wooden cabinet about 15 inches high about 17 inches wide and approximately 12 inches in depth. At the bottom of the cabinet was a wooden drawer in which various glass electrodes and other attachments were found. On a bakelite panel inside the top lid was a switch for turning the device on and off with two control indicators a socket for the insertion of the treatment attachments and a number of quarter inch holes from which ozone emanated when the control indicator was turned to the proper mark On the right hand side were three holes for the placing of bipolar and electrode attachments Current was furnished to the device by connecting it with the regular electrical outlet of home or office either alternating or direct current Though the directions for use called for different modes of treatment for various diseases and conditions a government witness brought out the fact that in general the therapy was applied locally to the area affected by the disease and elsewhere on the body In addition to treatment by application of the electrical attachments the ozone emanations were recommended in certain conditions Dietary instructions were furnished and the use of food cooked in aluminum ware was prohibited. A qualified electrical and radio engineer who had spent many years in examining electrical devices testified for the government that in going over the "condensator" he had employed the best scientific instruments and followed well recognized testing procedures and that though this device was represented in the advertising to produce 100,000,000 oscillations per second the examination at the National Bureau of Standards showed that it actually produced not more than 250,000 oscillations or kilocycles. A qualified physician specializing in physical therapy testified for the government that the use of the condensator would not cure so-called incurables suffering from any of the numerous disorders listed in the advertising and that even if heat is indicated in the treatment of any of these the amount of heat given off by the condensator would not penetrate deeply enough to produce any significant results. He testified further that some of the diseases in question require surgery x-ray and other types of therapy for their proper treatment. It was brought out also that William E. Holder originator and principal promoter of the device is not a physician had never attended any electrical school and has no scientific or college education of any sort, and that in treating persons at his residence in Windsor Ontario he takes at face value their statements about their physical condition that he has had no qualified physicians associated with him was deported from Chicago to Canada several years ago by the emigration authorities because of his promotion of the electric rubber chair cushion scheme previously mentioned and at present is barred from returning to the United States He is a British subject born in England in 1868 Because of his latest mail order enterprise which the government charged was a scheme to swindle the public a fraud order was issued Dec. 23 1942 against him D O Crowe and other names under which their operations were conducted.

Correspondence

REMOVAL OF TESTES IN TREATMENT OF MELANOMA

To the Editor—The clinical note "Malignant Melanoma of the Choroid with Extensive Metastasis Treated by Removing Secreting Tissue of the Testicles," by William P Herbst, published in THE JOURNAL, June 26, assumes that removal of the testes for melanoma may be followed by temporary clinical improvement as shown by the progress of the case reported following orchiectomy

The following summary represents an example in which removal of the testes had no clinical effect in delaying the rapid downhill progress in a similar instance of widespread melanoma

E. W., a white man aged 47, admitted to the clinic of the Brooklyn Cancer Institute on Jan 19, 1942, first noticed a small black spot at the inner angle of his eye eight years before. Up to five years before there was hardly any noticeable increase in its size. In the last year "this black spot" had grown into a fleshy tumor mass

A coal black papilloma measuring 0.5 by 1 by 1 cm, arising from the conjunctival surface of the lower lid, filled the inner canthus of his left eye. The patient was in good general health without evidence of metastases. His liver was not enlarged.

A radical exenteration of the orbit was recommended. This was done in another institution on Jan 30, 1942. The pathologic diagnosis was melanoma of caruncle and conjunctiva. By February 20 most of the skin grafts had taken and the patient was discharged.

For about one year, or until February 1943, he was followed through the clinic of the Brooklyn Cancer Institute without evidence of disease. In February a subcutaneous, button-like node was felt in the anterior abdominal wall. This was excised and shown to be a metastatic melanoma. Soon after, bluish black nodules developed on the roof of the orbit and numerous discrete, subcutaneous metastases were found scattered over most of his body. His liver enlarged rapidly, ascites accumulated. It was at this time that members of the staff of the Brooklyn Cancer Institute decided to remove his testicles with the hope that the removal of the testicular male hormone might in some way impede the rapid growth and spread of these metastatic lesions.

A bilateral orchiectomy was done on April 26. There was no postoperative reaction. The patient, however, showed no evidence of clinical improvement. His downhill course was rapid and he died on June 24, 1943.

An autopsy was obtained. The following is a summary of the anatomicopathologic diagnosis: melanoma arising in conjunctiva of left eye (exenteration left orbit), metastasis of the orbital roof, metastases to skin, both lungs, hilar glands, pleurae, pleural effusion, right, metastases to pericardium, myocardium, metastases to spleen, liver, kidney, mesentery, peritoneum, omentum, ascites. There was nothing in the gross or microscopic study to suggest that the orchiectomy had in any way affected the progress of his disease.

So far the only inferences which link melanoma to the sex glands arise from the following facts

1 With adolescence there is a localized deposition of pigment in the skin of the genitals and about the areola of the breasts

2 Pigmented nevi which remain quiescent during infancy and childhood have been known to become activated during adolescence or later in life. The only reported case of a baby dying of malignant melanoma is that of Parkes Weber (Spontaneous Inoculation of Melanotic Sarcoma from Mother to Fetus, *Brit M J* 1 537 [March 22] 1930), who described a case of melanoma transmitted from mother to child via the placenta with death of both.

The brilliant research of Huggins, Stevens and Hodges (Studies on Prostatic Cancer. II The Effects of Castration on Advanced Carcinoma of the Prostate Gland, *Arch Surg* 43 209 [Aug] 1941), which led up to the removal of the testes and the use of diethylstilbestrol in carcinoma of the prostate, and the work of Schinzinger (Carcinoma Mammæ, *Verhandl d deutsch Gesellsch f Chir* 18 28, 1889), and Beatson (On the Treatment of Inoperable Cases of Carcinoma of the Mamma. Suggestions for a New Method of Treatment, with Illustrative Cases, *Lancet* 2 104, 162, 1896), who first demonstrated the efficacy of castration for temporary alleviation of widespread metastases in mammary carcinoma, have no counterpart in any work done on melanoma.

It is therefore suggested that great caution be exercised and a great deal more basic research be done before the testes be removed as a routine measure in the treatment of melanoma.

WILLIAM E. HOWES, M.D., Brooklyn

ELECTROCARDIOGRAPHIC CHANGES IN HEART WOUNDS

To the Editor—In THE JOURNAL, July 3, page 664, Dr Mandel Weinstein reported a case of stab wound of the heart. In the interpretation of the electrocardiograms, he stated "Our patient's records show the typical progression of changes seen in infarction on the anterior wall of the heart." Inspection of the electrocardiograms, however, reveals patterns which are quite typical not of infarction but rather of acute pericarditis, which, of course, is always present in any case in which an operation on the heart is performed. In other reported cases, as in this case, when a coronary artery is not ligated or involved by the wound, the electrocardiographic changes due to the wound are frequently obscured by those of pericarditis. When a coronary artery is injured or ligated, one then sees either a combined pattern of infarction and pericarditis or, occasionally, the pattern of infarction alone. In the latter cases the changes due to pericarditis are masked or neutralized by those due to the infarction. Dr Arlie R. Barnes and I (*Arch Int Med* 65 291 [Feb] 1940) briefly summarized the literature on the electrocardiographic changes reported in heart wounds and the reader is referred to this article for further details.

The electrocardiogram of pericarditis has been recognized only relatively recently. While it simulates that of myocardial infarction, there are a number of points of difference which enable one to make the correct diagnosis. The importance of this differentiation is obvious.

PAUL H. NOTH, M.D., Detroit

Associate Professor of Medicine, Wayne
University College of Medicine

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, Sept 25, page 225

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery June 20-22 Sec, Dr B F Austin 519 Dexter Ave. Montgomery

ARKANSAS * Medical Nov 34 Sec, Dr D L Owens, Harrison Eclectic Little Rock Nov 4 Sec., C H Young 1415 Main St., Little Rock

CALIFORNIA * Written Sacramento Oct 18 21 Sec., Dr Frederick N Scatena 1020 N Street Sacramento.

CONNECTICUT * Written Hartford Nov 9 10 Endorsement New Haven Nov 23 Sec to the Board Dr Creighton Barker 258 Church St New Haven

DELAWARE Written Dover Jan 11 13 Endorsement Dover, Jan 18 Sec. Medical Council of Delaware Dr Joseph S McDaniel, 229 S State St. Dover

DISTRICT OF COLUMBIA * Washington Nov 8 9 Sec Commission on Licensure Dr G C Ruhland 6150 E. Municipal Bldg Washington

FLORIDA * Jacksonville Nov 22 23 Sec., Dr William M Rowlett, Box 786 Tampa.

GEORGIA October or November Sec State Examining Boards, Mr R. C Coleman 111 State Capitol Atlanta

IDaho Boise Jan 11 Dir Bureau of Occupational Licenses, Mrs Lela D Painter 355 State Capitol Bldg Boise

ILLINOIS Chicago Oct 12 14 Superintendent of Registration Department of Registration and Education Mr Philip M Harman Springfield.

IOWA * Iowa City Dec. 27 29 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines

KANSAS Kansas City Feb 23 Sec. Dr J F Hassig 905 N Seventh St. Kansas City

KENTUCKY Louisville Dec. 6-8 Sec., Dr Philip E Blackerby 620 S Third St. Louisville.

MAINE Portland Nov 9 10 Sec., Dr Adam P Leighton 192 State St Portland.

MARYLAND Medical Baltimore Dec. 14 17 Sec. Dr J T O Mara 1215 Cathedral St. Baltimore. Homeopathic Baltimore Dec. 14 15 Sec. Dr J A. Evans 612 W 40th St. Baltimore

MASSACHUSETTS Boston Nov 16-19 Sec. Board of Registration in Medicine Dr H Q Gallupe, 413 F State House Boston

MICHIGAN * Ann Arbor Oct. 13 15 Sec. Board of Registration in Medicine, Dr J Earl McIntyre 100 W Allegan St., Lansing

MINNESOTA * Minneapolis Oct. 19 21 Sec Dr J F DuBois, 230 Lowry Medical Arts Bldg St. Paul

MISSOURI St. Louis Nov 15 17 Sec State Board of Health, Dr James Stewart State Capitol Bldg Jefferson City

NEVADA Endorsement Carson City Nov 1 Sec., Dr G H Ross 215 Carson St. Carson City

NEW JERSEY Trenton Oct 19 20 Sec. Dr E S Hallinger 28 W State St. Trenton

NEW MEXICO * Endorsement Santa Fe Oct. 11 12 Sec., Dr LeGrand Ward 141 Palace Ave Santa Fe.

NORTH DAKOTA Grand Forks Jan 4-7 Sec Dr G M. Williamson, 4 1/2 S Third St. Grand Forks

OHIO Endorsement Columbus Oct. 7 Written Columbus Dec. 4 Sec Dr H M Platter 21 W Broad St. Columbus.

OREGON * Endorsement Portland Oct. 23 Exec. Sec. Miss Lorraine M Conlee 608 Failing Bldg Portland

PENNSYLVANIA Philadelphia and Pittsburgh January Act Sec Bureau of Professional Licensing Department of Public Instruction Mrs Marguerite G Steiner 358 Education Bldg Harrisburg

RHODE ISLAND * Providence Oct 7-8 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence

SOUTH CAROLINA Charleston Dec. 20 22 Sec. Dr N B Heyward 1329 Blanding St. Columbia.

SOUTH DAKOTA * Pierre Jan 18 19 Dir Medical Licensure, State Board of Health Dr Gilbert Cottam Pierre.

VERMONT Burlington Dec. 15-17 Sec. Dr F J Lawless Richford.

VIRGINIA Richmond Dec 14 17 Sec Dr J W Preston 30 1/2 Franklin Road Roanoke.

WEST VIRGINIA Charleston Oct. 25 27 Commissioner Public Health Council Dr John E Offner State Capitol, Charleston.

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT Oct 9 Address State Board of Healing Arts, 250 Church St., New Haven

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FLORIDA DeLand, Nov 6 Sec Dr John F Conn, John B Stetson University DeLand

IOWA Des Moines Oct 12 Dir, Division of Licensure & Registration Mr H W Grefe Capitol Bldg Des Moines

NEW MEXICO Feb 7 Sec. Miss Pia Joerger, State Capitol, Santa Fe

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RHODE ISLAND Providence, Nov 17 Chief Division of Examiners, Mr Thomas B Casey, 366 State Office Building, Providence

SOUTH DAKOTA Vermillion December Sec., Dr G M Evans, Yankton

TENNESSEE Nashville and Memphis Dec 10 11 Sec, Dr O W Hyman 874 Union Ave Memphis

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospital Association Not Exempt from Taxation as Charitable Institution if Charity or Benevolence is Limited to Members—The Farmers' Union Hospital Association of Elk City, Okla., was incorporated under the laws of Oklahoma relating to corporations for benevolent and charitable purposes, its articles of incorporation specifically providing that it should have no capital stock and that its profits, if any, should not inure to the benefit of the individual members but should be used for charitable and benevolent purposes. The corporation undertook to render medical and hospital care both to members of the corporation and to nonmembers. Members paid a membership fee of \$50 and an annual fee that varied from year to year, being an estimate of the cost of its services for the current year in the light of past experience and future expectations. In return, members received necessary hospital and medical services and care. Nonmembers could receive available services by paying the customary cost for services received, which was at a much higher rate than for members. There was no evidence of "any conscious effort to bestow" charity or benevolence on any person not connected with the organization, though some persons did receive services without cost but, according to the evidence, that was due entirely to the inability of the association to collect from them for services previously rendered them. The association generally made an annual profit and this profit was used to increase its facilities and to reduce the cost of service to its members for the following year. The association instituted proceedings to force the county excise board of Beckham County, Okla., to exempt the association's property from ad valorem taxes. It claimed it was entitled to such exemption by reason of an Oklahoma statute that exempts from taxation "All property, both real and personal, of benevolent institutions or societies, devoted solely to the appropriate objects of these institutions." From adverse determinations the hospital association appealed eventually to the Supreme Court of Oklahoma.

The sole question for determination here, said the Supreme Court, is whether the property of the hospital association was utilized for charitable or benevolent purposes. If so, the property is exempt from taxation. Charitable is defined in 14 C J S p 407 in its broader sense as comprehending all kindly inclinations which men ought to bear toward one another, irrespective of class conditions and invidious distinctions. In 14 C J S, Charities, p 411, sec. 1, 'charity' is said to embrace the sense of benevolence philanthropy and good will and good affections which men ought to bear toward mankind. Specifically, a charity or charitable hospital is defined as one that is not maintained for gain profit or private advantage 14 C J S,

Charities, p 422, sec 2c, and cases cited in the annotations, 61 C J 500, sec 597 et seq. It is generally said that "The character of the institution is to be determined, not alone by the powers of the corporation as defined in its charter, but also by the manner of conducting the hospital." *Steward v. California Med etc, Ass'n*, 178 Cal 418, 176 P 46. There is a wealth of cases, continued the court, and a variety of schemes of organizations and methods of operation, and many are held exempt and others are not. In all of them there is one factor the presence or absence of which means almost more than anything else in determining the issue. That is this. Are the doors of the hospital open to all, poor patients and pay patients alike? If the answer is yes, it is a charitable hospital and its property is entitled to the exemption from taxation provided, if the answer is no, it is not a charitable hospital and is not entitled to the exemption. In this instance the hospital association intended charity and benevolence and private benefit and advantage to its membership and to no one else. Whatever service it dispensed for which it received no pay was accidental or incidental. Its officers very carefully refrained from saying that its doors were open to the world irrespective of ability to pay. In speaking of private advantage as being a factor that precludes any organization from assuming the status of a charitable or benevolent institution, we mean private advantage to the organizers and the supporters thereof. The fact that a profit is realized from the operation of a hospital does not condemn the scheme as noncharitable or nonbenevolent. It is the use to which the profit is put that means much. In this case some of the profit is used to increase the facilities and some to the reduction of the cost to the members. This is a private advantage. The members of the hospital association here involved cooperated for their mutual advantage, but the record is bare of any evidence of an intent on their part to distribute charity or benevolence to any person not a member.

Accordingly, the hospital property was held to be subject to taxation—*In re Farmers' Union Hospital Ass'n of Elk City*, 126 P (2d) 244 (Okla, 1942).

Medical Practice Acts. The Prescribing of Foods Based on a Diagnosis of Ailments Constitutes the Practice of Medicine—Pinkus, who holds college degrees and, in the words of the court, has studied "food chemistry and science, biology and physiology," conducted a store in Newark, N J, wherein food products were sold. On occasion, at least, he advised customers concerning their physical ailments and sold them certain "trade-name packaged" food products for the relief thereof. He was prosecuted for practicing medicine without a license in violation of the New Jersey medical practice act. At the trial, one witness testified that she told Pinkus that she had distress in her stomach and pressure around her heart and that he informed her that her condition was due to improper foods and that she should avoid starches and meats and eat "plenty of fruits and vegetables." He recommended and sold her a package of a product labeled "Sorbex." This witness testified that on another occasion she told Pinkus that she had a pain under both ears and down the side of her neck and that he informed her that her glands were not functioning properly and that she needed iron. He sold her a package of "Seatabs" and advised her to take one to four tablets daily. Later this same witness, so she testified, again visited Pinkus, informing him that she had an irritation around the waistline and had an itch. He told her that she had an acid condition, that she should not use any common table salt and that she should eat "lots of fruit, vegetables and lemons." He then sold her a package of "Vegebroth," advising her to use it twice a day. Two other witnesses testified to similar incidents and advice on the occasion of visits to Pinkus's store. Pinkus was found guilty of violating the medical practice act and prosecuted a writ of certiorari in the supreme court of New Jersey.

He contended that there was no evidence before the trial court of any violation of the medical practice act, that is, that his

acts did not amount to the practice of medicine and surgery as defined in the medical practice act. The practice of medicine, said the supreme court, is defined in the medical practice act as follows:

Any person shall be regarded as practicing medicine and surgery, within the meaning of this chapter, who holds himself out as being able to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition, or who shall either offer or undertake by any means or methods to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition.—R S 45 9 18, N J S A 45 9 18

In view of this language, we think it is clear that the acts of Pinkus did constitute the practice of medicine. Whether or not the substances he sold and prescribed are to be classed as medicines or not makes no difference. Clearly he attempted to diagnose the "physical condition" of the witnesses and to ascribe a cause for its existence and prescribe for such condition. Pinkus argued that he was merely engaged in the sale of food and food products because he had special knowledge concerning food. But, said the court, he went far beyond the mere sale of food when he diagnosed alleged ailments of the witnesses and expressed an opinion as to their cause. We think the practices engaged in by Pinkus came within the inhibition of the act.

Pinkus next contended that the section of the medical practice act defining the practice of medicine is unconstitutional in that it is unreasonable. The power of the legislature, answered the court, to regulate the practice of medicine has been upheld many times. The contention is now made that the language of the definition is so broad that it would prohibit the mere casual suggestion by one person to another of treatment that would help a condition described. However that may be, it is not being enforced in this case in any such set of circumstances. Here Pinkus was engaged in a commercial enterprise. He sold certain products and in connection with their sale attempted to diagnose ailments and conditions and to give advice as to dieting. We think there is nothing unreasonable in prohibiting this practice by other than licensed physicians.

The judgment of conviction was in effect affirmed—*Pinkus v. MacMahon, Judge*, 29 A (2d) 885 (N J, 1943).

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 10-13. Dr W L Benedict, 102 Second Ave. S W, Rochester, Minn, Secretary.
- American Public Health Association, New York, Oct. 12-14. Dr Reginald M Atwater, 1790 Broadway, New York, Executive Secretary.
- Association of Military Surgeons of the United States, Philadelphia, Oct. 21-23. Colonel James M Phalen, Army Medical Museum, Washington, D C, Secretary.
- Delaware, Medical Society of, Wilmington, Oct. 12-13. Dr W O La Motte, 601 Delaware Ave., Wilmington, Secretary.
- Inter State Postgraduate Medical Association of North America, Chicago, Oct. 26-29. Dr Arthur G Sullivan, 16 North Carroll St., Madison, Wis., Managing Director.
- Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 4-6. Dr William M Korth, 1115 Grand Ave., Kansas City, Mo., Secretary.
- Kentucky State Medical Association, Louisville, Oct. 4-6. Dr P E Blackerby, 620 South Third St., Louisville, Acting Secretary.
- Oklahoma City Clinical Society, Oklahoma City, Oct. 18-21. Dr Clark H. Hall, 117 North Broadway, Oklahoma City, Secretary.
- Omaha Mid West Clinical Society, Omaha, Oct. 25-29. Dr J D McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 5-7. Dr Walter F Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Medical Association, Cincinnati, November 16-18. Mr C P Loranz, Empire Building, Birmingham, Alabama, Secretary.
- Virginia, Medical Society of, Roanoke, Oct. 25-27. Miss Agnes V Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1913 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

26 1-146 (July) 1943

- Schneider Index as Modified by Diseases of Circulation H. Feil, M. Petti and O. Park—p. 1
Blood Pressure in the Aged Study of 1000 Elderly Male Subjects H. I. Russek—p. 11
Combined Use of Strophanthin K and Digitalis in Treatment of Congestive Heart Failure Preliminary Report. J. E. Garcia and B. A. Goldman—p. 20
Aortic Regurgitation Caused by Dilatation of Aortic Orifice and Associated with Characteristic Valvular Lesion B. A. Gouley and E. M. Sichel—p. 24
Routine Use of Cedi-lan in Clinical Practice A. E. Parsonnet and A. Bernstein—p. 39
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*Course of Blood Pressure Before During and After Coronary Occlusion A. M. Master, H. L. Jaffe, S. Dack and N. Silver—p. 92
Duration of Ventricular Systole as Measured by QT Interval of Electrocardiogram with Especial Reference to Cardiac Enlargement With and Without Congestive Failure S. H. Phang and P. D. White—p. 108
Depressor Effect of Tissue Implants in Hypertensive Dogs S. Rodbard and L. N. Katz—p. 114

Blood Pressure and Coronary Occlusion—Master and his co-workers investigated the blood pressure in 538 attacks of coronary occlusion. Slightly over half of the attacks were initial ones and the remainder were second or third attacks. The authors employed the following criteria in judging whether hypertension had been present before the attacks: (1) a systolic pressure of 150 mm or more at any time during observation; (2) a diastolic pressure of 96 mm or more prior to the attack; (3) a diastolic pressure of 90 mm or more during or after the attack; and (4) pronounced enlargement of the heart without obvious cause. It was found that the incidence of hypertension increased with age. The blood pressure fell in every case but in a few the fall was slight. A transitory rise in pressure occurred infrequently at the onset of the attack. A rapid fall was somewhat more common than a gradual one. Occasionally the fall did not occur until after a week. The lowest pressure was usually reached between the twelfth and twentieth days. In some cases the initial fall was soon followed by a temporary or permanent rise in pressure. The trend of the blood pressure was similar in the hypertensive and non-hypertensive groups, although a rapid fall was more common among the nonhypertensive patients who died. The systolic blood pressure rarely fell below 90 mm in the hypertensive group, but this was common in the nonhypertensive group. When the pressure fell below 80 the patient usually died. In almost one fifth of the patients with a previous pressure of 200 mm or more the pressure did not fall below 150 mm. Two thirds of the hypertensive patients regained a hypertensive level, in half of these this took place before discharge from the hospital, and in the remaining half usually within one or two years. The height of the blood pressure after the attack did not significantly influence the future course of the case with respect to subsequent angina pectoris, heart failure, coronary occlusion or death.

American Journal of Clinical Pathology, Baltimore

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- Idiopathic Hypoproteinememia A. S. Giordano—p. 285
Blood Amylase D. Polowe—p. 288
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Postmortem Examination in Cases of Suspected Rape O. J. Pollak—p. 309
Transfusion Reaction Caused by Proven Dangerous Universal Donor S. Weintraub—p. 315
Agranulocytosis Following Use of Novaldin Report of Case W. Moloney and M. Vidoli—p. 317
*Thallium Poisoning I. Detection of Thallium in Biologic Material A. O. Gettler and L. Weiss—p. 322

Thallium Poisoning—Gettler and Weiss state that, before proceeding to the actual detection of thallium, all organic matter in the tissue must be destroyed by an oxidative process. They list the procedures for the digestion of biologic material and describe the method which they found to be least time consuming and at the same time yielding a solution free of all organic substances. The various qualitative tests for thallium are critically reviewed. A detailed description for the detection of thallium in biologic material is given.

American J. Obstetrics and Gynecology, St. Louis

46:1-46 (July) 1943 Partial Index

- Infantile Mortality and Bacteriologic Investigations of Effect of Prolonged Labor on Baby R. G. Douglas and H. J. Stander—p. 1
*Further Contribution to Syndrome of Fibroma of Ovary with Fluid in the Abdomen and Chest, Meigs's Syndrome. J. V. Meigs, S. H. Armstrong and H. H. Hamilton—p. 19
*Nutrition Studies During Pregnancy Bertha S. Burke, Virginia A. Beal, S. B. Kirkwood and H. C. Stuart—p. 38
Detection of Ovulation by Basal Temperature Curve with Correlating Endometrial Studies P. L. Martin—p. 53
Rate of Filtration Through Capillary Walls in Pregnancy C. E. McLennan—p. 63
Report on Sequential Abortion E. Allen—p. 70
Fluidity of Menstrual Blood a Proteolytic Effect C. Huggins, Virginia C. Vail and M. E. Davis—p. 78
Hypothyroidism as a Problem in Women Second Report. C. H. Davis—p. 85
Attempt to Correlate Preeclamptic State with Congenital Anomaly of Kidney R. M. Hunter—p. 91
Favorable Response of Advanced Endometriosis to Testosterone Proportionate Therapy J. C. Hurst—p. 97
Combined X-Ray and External Pelvimetry D. J. McSweeney and A. M. Moloney—p. 102
Relation of Sacral Promontory to Pelvic Inlet H. Thoms—p. 110
Effect of Complementing Diet in Pregnancy with Calcium Phosphorus, Iron and Vitamins A and D F. L. Adair, W. J. Dieckmann, H. Michel and others—p. 116

Meigs's Syndrome—Meigs and Cass reported in 1937 4 cases of ascites and hydrothorax associated with fibroma of the ovary. The serous effusions disappeared with removal of the tumor. In the years following the first presentation of this syndrome other cases were reported and brought to the authors' attention. The present report by Meigs, Armstrong and Hamilton lists 27 authentic cases. The syndrome is of considerable importance, for some patients have died without proper surgical relief while others, doomed because of a tumor considered inoperable, are now well. Two patients operated on in 1941 presented an opportunity to palpate the structure of the diaphragm and to collect fluid for investigation. The fluid in the abdomen and that in the chest were identical. Particulate carbon passed from the abdominal to the thoracic fluid quickly and easily. Three important investigative problems emerge from Meigs's syndrome: (a) the mechanism whereby ovarian fibroma gives rise to abdominal fluid, (b) the mechanism of the hydrothorax, (c) the question of whether similar mechanisms operate in combined hydrothorax and ascites when the primary pathologic condition is other than fibroma of the ovary. Cullen, Kelly and others showed that fluid may be present in the abdomen with lesions other than ovarian fibroma. That this fluid is similar to the fluid found with fibroma has not been proved, though it may be considered probable. In most cases of uterine fibroid with fluid there are adhesions of omentum to the tumor or twists of the pedicle, which were not present in the cases reported here. It remains for joint investigation by thoracic surgeons and others to demonstrate the presence of diaphragmatic perforations of small or large size or the presence of the rarely reported pleuroperitoneal tubes.

and to determine the direction and the degree of penetrability of the diaphragmatic lymphatics. The syndrome of ovarian fibroma with hydrothorax and ascites is of practical clinical significance.

Studies of Nutrition During Pregnancy—Burke and her associates studied 216 women chosen from the antepartum clinics of the Boston Lying-in Hospital. These women were seen at least monthly through the seventh month of pregnancy, every two weeks during the eighth month and weekly thereafter unless more frequently because of complications. The study revealed a relationship between the diet of the mother during pregnancy and the condition of her infant at birth. All still-born infants, all infants who died within a few days of birth with the exception of one, the majority of infants with well defined congenital defects, all premature infants and all "functionally immature" infants were born to mothers whose diets during pregnancy were very inadequate. If the mother's diet during pregnancy is excellent or good her infant will probably be in excellent or good physical condition. There was one exception to this in the present series of cases. A statistically significant relationship was found between the antepartum diet and the course of pregnancy. This relationship, however, was not as clear as that between the antepartum dietary rating and the condition of the infant. This indicates that when nutrition during pregnancy is inadequate the fetus suffers to a greater degree than the mother. In this study no mother whose diet during pregnancy was considered "good" or "excellent" had preeclampsia, while with a "poor to very poor" diet during pregnancy almost 50 per cent had preeclampsia. No statistically significant associations were found between antepartum nutrition and the duration or the character of labor and delivery. There was a tendency for the mothers whose diets during pregnancy were "poor to very poor" to have more difficult types of labor and to have more major complications at delivery despite the fact that these women had on the average smaller infants than were born to the women whose diets were "good" or "excellent." No relationships of statistical significance were found between antepartum nutrition and the postpartum course. There seemed to be a tendency toward a relationship between antepartum nutrition and the occurrence of major complications in the puerperium.

American Journal of Surgery, New York

61 1-156 (July) 1943

- *Perinephric Abscess in Infants and Children. Study of 26 Patients Surgically Treated. H. Swan—p. 3
- Present Status of Gastric and Duodenal Ulcer. J. L. DeCoursey—p. 11
- Pentothal Sodium Oxygen Anesthesia in Major Surgery. E. A. French—p. 16
- Acute Cholecystitis. Certain Pathologic and Surgical Aspects. G. T. Root and J. T. Priestley—p. 38
- Five Years' Experience with Hemo-Irradiation According to Knott Technique. H. A. Barrett—p. 42
- Phlegmonous Cecitis. Report of 2 Cases and Review of Literature. A. H. Spivack and I. Busch—p. 54
- Operation for Pilonidal Sinus. L. Cohn—p. 61
- Traumatic Rupture of Spleen. Experiences with 10 Cases in General Hospital. H. N. Harkins and E. J. Zabinski—p. 67
- Diagnosis of Perforated Ulcer. Two Useful Maneuvers by Means of Which Pneumoperitoneum and Diaphragmatic Irritation are Demonstrated More Clearly. A. E. Pearce—p. 76
- Theory and Therapy of Shock. Excessive Fluid Administration. F. M. Allen—p. 79
- Improved Technique for Blind Nailing of Neck of Femur. Crecca Cetrulo Guide. W. D. Crecca and G. I. Cetrulo—p. 93
- Sulfadiazine Anuria. Its Relief by Ureteropyelostomy. M. F. Campbell and J. H. Fobes—p. 99
- Technic for Repair of 'Baseball' Finger. G. M. Saypol—p. 103
- Skin Grafting. New Method Based on Principles of Tissue Culture. M. E. Sano—p. 105

Perinephric Abscess in Infants and Children—Swan stresses that perinephric abscess is not as rare in infants and children as is generally believed. He reviews a series of 26 proved and 6 possible cases. It is important for prognostic and therapeutic reasons to classify patients on the etiologic basis of their lesion as metastatic, complicated by underlying renal disease or secondary to trauma to the kidney. In children a history which includes urinary complaints or a finding of albumin or white cells in the urine strongly suggests a complicated type of lesion and indicates a thorough study of the urinary tract. An intravenous pyelogram should be done preoperatively on all patients suspected of having a perinephric

abscess unless they are too ill to tolerate the procedure. Early incision and drainage is the treatment for metastatic or traumatic abscess. In abscess complicating urinary disease, therapy must be individualized and is twofold in purpose: (1) the immediate treatment of the abscess and (2) the subsequent treatment of the underlying urinary tract disease. The mortality was nil and the hospitalization averaged about three weeks in children with metastatic or traumatic abscess. The mortality was 45 per cent and the hospital stay averaged ten weeks in children in whom abscess complicated urinary disease.

American Journal of Tropical Medicine, Baltimore

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- Employment of Rickettsial Vaccine for Antigen in Diagnostic Complement Fixation Test. F. H. K. Reynolds and M. Pollard—p. 321
- Amebic Infection of Vagina and Uterus. Esther M. Morse and S. P. Seaton—p. 325
- Incidence of Amebiasis Observed at Chicago Hospital over Twelve Year Period. M. Hood—p. 327
- Multiple Deficiency Disease with Allergy and Nutritional Enteritis. Case Report. A. C. Reed, J. L. Carr and F. Rochex—p. 333
- Death Due to Akee Poisoning in Panama. B. H. Kean—p. 339
- Comparison of Three Strains of *Trichinella Spiralis*. I. Pathogenicity and Extent of Larval Development in Musculature. I. Rappaport—p. 343
- Id. II. Longevity and Sex Ratio of Adults in Intestine and Rapidity of Larval Development in Musculature. I. Rappaport—p. 351
- Diphyllobothrium Latum* in Florida. W. A. Summers and P. P. Weinstein—p. 363
- Factors Influencing Reported Incidence of Appendical Oxyuriasis. L. E. Rector—p. 369
- Report Concerning Certain Anophelines Found Near Mexican Guatemalan Frontier. H. W. Kumm, M. E. Bustamante and J. R. Herrera—p. 373
- Clinical Use of Flea Antigen in Patients Hypersensitive to Flea Bites. Barbara C. McIvor and L. S. Chorney—p. 377

Archives of Neurology and Psychiatry, Chicago

50 1-110 (July) 1943

- Intramedullary Cavitation Resulting from Adhesive Spinal Arachnoiditis. T. Nelson—p. 1
- Effect of Metrazol Convulsions on Conditioned Reflexes in Dogs. V. H. Rosen and W. H. Gantt—p. 8
- Clinical and Electroencephalographic Studies on Criminal Psychopaths. D. Silverman—p. 18
- Integrated Facial Patterns Elicited by Stimulation of Brain Stem. E. A. Weinstein and M. B. Bender—p. 34
- Primary Sarcomas of Brain. Review of Literature and Report of 12 Cases. K. H. Abbott and J. W. Kernohan—p. 43
- Dermatome Hypalgesia Associated with Herniation of Intervertebral Disk. J. J. Keegan—p. 67

Archives of Surgery, Chicago

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- Guide to Replacement Therapy for Loss of Blood or Plasma. H. P. Jenkins, P. W. Schafer and F. M. Owens Jr.—p. 1
- Ligation of Saphenous Vein for Varicose Veins. R. W. Postlethwait—p. 4
- Sarcoma of Stomach. Clinical and Pathologic Study. G. F. Schroeder and H. J. Schattenberg—p. 8
- Treatment of Acute Cholecystitis. Suggested Two Stage Treatment. D. MacDonald—p. 20
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- Mechanism of Erythremia. Erythremia Resulting from Traumatic Shock in Dogs and from Injections of Epinephrine into Human Beings and Dogs. R. D. Taylor and I. H. Page—p. 59
- Angiofibroma of Ileum. Clinical Picture in Tumors of Small Intestine. M. E. Lichtenstein and F. R. Dutra—p. 69
- Chronic Effects Resulting from Downward Traction on Liver. W. M. Booker—p. 76
- Review of Urologic Surgery. A. J. Scholl, F. Hinman, A. von Lichtenberg, A. B. Hepler, R. Gutierrez, G. J. Thompson, E. N. Cook, E. Wildbolz and V. J. O'Connor—p. 86

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- Role of Kidney in Genesis of Hypertension. H. W. Smith, W. Goldring and H. Chasis—p. 449
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- Management of Peripheral Vascular Disease. A. W. Duryee—p. 478
- Dietary Treatment of Laennec's Cirrhosis with Special Reference to Early Stages of Disease. A. J. Patek Jr.—p. 498
- Present Status of Continuous Caudal Analgesia in Obstetrics. W. B. Edwards and R. A. Hingson—p. 507

Diseases of Chest, Chicago

9 297-382 (July-Aug) 1943

- *Sulfadiazine Pneumonia Therapy in Canal Zone (With Especial Reference to Bradycardia) S M Browne H P Marvin and E R Smith—p 297
- Inhalation of Nebulized Solutions of Sulfonamides in Treatment of Bronchiectasis J W Stacey—p 302
- Bronchoscopic Aids in Medical Conditions Within Chest J W Peabody—p 307
- Correlated Applied Anatomy of Bronchial Tree and Lungs with System of Nomenclature C L Jackson and J F Huber—p 319
- Post Thoracoplasty Care Scoliosis Pain and Rehabilitation R Shaw—p 327
- Hexylresorcinol Solution in Treatment of Tuberculous Empyema J J Mendelsohn—p 334
- Woodward High School Survey Barbara A Hewell and H J Nimitz—p 348

Sulfadiazine Therapy of Pneumonia in Canal Zone—Browne and his collaborators treated 100 consecutive unselected pneumonia patients in the Canal Zone with sulfadiazine. They utilized the original dosage recommended by the Council on Pharmacy and Chemistry, namely 0.10 Gm per kilogram of body weight initially, followed by 1 Gm every four hours day and night until a normal temperature had been present for seventy-two hours, at which time the chemotherapy was discontinued. There were 45 lobar and 55 bronchopneumonias. The average length of time between onset of symptoms and hospital admission was 4.07 days. Bacteriologically there were 42 typed pneumococcus (including 10 type I), 7 hemolytic streptococcus and 51 cases of undetermined etiology. The average sulfadiazine dosage was 40.5 Gm. The maximum sulfadiazine concentrations varied from 8 mg to 30.8 mg per hundred cubic centimeters. The temperature returned to normal by crisis within forty-eight hours in 78 patients, by lysis in 21 (one death). Pneumonia and drug complications with complete recovery in all cases were as follows: jaundice, 1, serous pleural exudate, 2, nausea and vomiting, 1. There was one death, a mortality rate of 1 per cent. Most noteworthy and inexplicable was the fact that 63 of the 100 patients developed a sinus bradycardia with occasional heart rates as slow as 36 beats per minute during or immediately following sulfadiazine treatment. The authors conclude that sulfadiazine is most efficacious in pneumonia, that it is equally effective in the treatment of pneumonia in tropical as well as in other climates, and that it is accompanied by fewer drug reactions than sulfa-pyridine or sulfathiazole.

Gastroenterology, Baltimore

1 555-634 (June) 1943

- *Significance of Gastroscopic Findings in Patients with Duodenal Ulcer H J Tumen and M M Lieberthal—p 555
- Allergic Reaction in Gallbladder Experimental Studies in Rhesus Monkey M Walzer, I Gray M Harten S Livingston and D Grayzel—p 565
- Sulfonamide Treatment and Clinical Significance of Chronic Biliary Tract Infections L M Morrison W A Swalm W E Burnett F W Konzelmann and E J Spaulding—p 573
- In Situ pH of Antrum of Stomach Pylorus and Duodenum H C Breuhau and J B Eyerly—p 583
- Effect of Thymoxyethylidithylamine (929 F) on Gastric and Intestinal Motility An Experimental Study G A Hallenbeck C F Code and F C Mann—p 588
- Study of Excretion of Cinchophen in Bile and Urine and Posology of Drug J H Annegers F E Snapp A C Ivy A J Atkinson and A L Berman—p 597

Gastroscopic Findings in Patients with Duodenal Ulcer—Tumen and Lieberthal made gastroscopic studies on 50 patients with duodenal ulcer uncomplicated by pyloric obstruction. Of these, 33 had chronic gastritis, 1 had unclassifiable inflammatory changes and 16 had normal stomachs. Six of the 16 patients with no evidence of gastritis had an atypical history or poor response to treatment or both. Twenty-one of the 33 patients with gastritis had an atypical history or poor response to treatment or both. While the incidence of atypical history and/or poor treatment response was somewhat greater in ulcer patients who had gastritis than in those who had not, it is difficult to ascribe much significance to this because among the 21 patients with gastritis who were examined by gastro-scope more than once, the clinical severity of the symptoms seemed related to the gastroscopic picture in only 10. In the remaining 11 there was no correlation between the gastroscopic

picture and the presence or character of symptoms. The presence of gastritis did not regularly influence the clinical course of duodenal ulcer. It was impossible to postulate the presence or absence of associated gastritis on the basis of the nature of the symptoms or the character of the response to treatment.

Georgia Medical Association Journal, Atlanta

32 151-184 (May) 1943

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- Lesions of Esophagus and Stomach W F Lake—p 154
- Diagnostic Methods Utilized in Study of Colon with Consideration of Various Types of Disease Found J J Clark—p 156
- Chronic Appendicitis A A Rayle—p 157
- Röntgenologic Studies of Gallbladder J W Landham—p 161
- One Hundred and One Years of Anesthesia J S Lundy—p 167
- Recommendations for Venereal Disease Control Program in Industry Report of Advisory Committee on Control of Venereal Diseases O L Anderson—p 172

32 185-220 (June) 1943

- Symposium on Eye, Ear, Nose and Throat Problems Aneurysm in Eyelid Report of Case S J Lewis—p 185
- Id Dacryocystorhinostomy Logical Treatment of Occlusion of Lacrimal Sac A V Hallum—p 186
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- Id Osteomyelitis of Frontal Bone L A Brown—p 192
- Id Laryngectomy for Carcinoma M Eguen F Neuffer, W B Matthews and F Ogden—p 194
- Hirsutism Disease Report of Cases C H Watt—p 197
- Treatment of Perforated Duodenal Ulcer from Surgical Standpoint J C Blalock—p 205

Indiana State Medical Assn Journal, Indianapolis

36 331-378 (July) 1943

- Realistic Approach to Present Medical Problems F W Rankin—p 331
- Prevention and Treatment of Infections of Hand V E Siler—p 334
- Treatment of Uncomplicated Diabetes with Mixtures of Insulin and Protamine Zinc Insulin F B Peck—p 340
- Report of Case of Palindromic Rheumatism J L Ferry—p 348

Journal of Clin. Endocrinology, Springfield, Ill.

3 321-388 (June) 1943

- Excretion of Sex Hormones in Abnormalities of Puberty I T Nathan and J C Aub—p 321
- Gonadotropin Excretion in Normal Men and Women and Cases of Hysterectomy Menopause Migraine Epilepsy and Eunuchoidism R Main W Cox R O Neal and J Stoeckel—p 331
- Metabolic Changes in Patient with Addison's Disease Following Onset of Diabetes Mellitus G W Thorn and M Clinton Jr—p 335
- Diabetes Mellitus Associated with Hirsutism and Unusual Insulin Resistance Case Report R L Pullen and W A Sodeman—p 345
- Serum Phosphatase Activity in Hyperparathyroidism N C Klendshoj and G F Koepf—p 351
- *Melanotropic Hormone and Vitiligo Report of 11 Cases J C M Fournier J M Cervino and O Conti—p 353
- Therapy of Seminal Inadequacy II Use of an Extract of Chorionic Gonadotropin and Pituitary Synergist C D Davis J H M Madden and E C Hamblen—p 357
- Breast Hypertrophy in Male Report of 2 Cases of Pseudogynecomastia with Surgical Reconstruction J W Malinac—p 364
- Structure of Human Anterior Pituitary Gland After Administration of Estrogenic Hormones C Spark—p 367

Melanotropic Hormone and Vitiligo—The fact that the pituitary gland produces a melanotropic hormone and that dyschromia occurs in both hypopituitarism and hyperpituitarism led Fournier and his collaborators to investigate the possible effect of treatment with this hormone on vitiligo. The authors employed the hormone in 11 cases. Treatment was started by giving a local intradermal injection of 400 frog units twice a week. The beneficial effect consisted in a striking reduction in the area of the leukoderma. This therapy proved successful in 8 of 11 patients (73 per cent). One patient was given fresh bovine hypophyses orally, 9 others were given a purified extract of the hormone either locally or subcutaneously. The systemic action of these therapeutic measures is shown by the improvement in areas of vitiligo remote from the site of local intradermal injections. Local ionization with the melanotropic hormone was tried successfully once. Improvement was more rapid and was of a greater degree in the patches which had appeared recently. Satisfactory results were likewise obtained in cases of vitiligo of ten years duration.

Journal Industrial Hygiene & Toxicology, Baltimore
25 199-140 (June) 1943

- Physiologic Response of Rabbits to Cyclohexane, Methylcyclohexane and Certain Derivatives of These Compounds I Oral Administration and Cutaneous Application J F Treon, W E Crutchfield Jr and K V Kitzmiller—p 199
- *Byssinosis Report of 2 Cases and Review of Literature H L Bolen—p 215
- Threshold Toxicity of Gasoline Vapor P Drinker, C P Yaglou and Madeleine Field Warren—p 225
- Physiologic Properties of Indium and Its Compounds H G C Harrold, S F Meek, N Whitman and C P McCord—p 233
- Hypersensitivity to Adhesive Tape Report of 4 Cases Showing Its Variable Etiology H Keil—p 238
- Determination of Volatile Halogenated Hydrocarbons in Blood H E Moran—p 243

Byssinosis—According to Bolen the term byssinosis is applied to a form of respiratory disease affecting workers in cotton mills, where much dust is given off in the processes of preparing the cotton for spinning and weaving. In the early stage the symptomatology is similar to the so-called heckling fever, mill fever or Monday fever affecting workers in cotton mills. The onset is insidious. The victim sneezes frequently, develops a slight, dry, increasingly irritating cough and is aware of a feeling of constriction in the chest. Dyspnea becomes more pronounced. As the fine particles or strands of cotton become lodged in the lungs an irritation is set up and the breathing becomes more labored, the cough more metallic. The disease progresses, with individual variation, over a period of years. As the cotton dust makes its way into the finer bronchi there is a decrease in vital capacity. The victim becomes a semi-invalid and is forced to give up work entirely. Before this stage of permanent disability is reached, however, many workers change their occupation. The author reviews the literature on byssinosis and presents the histories of 2 patients both of whom had worked for many years in the card room of a cotton mill. In 1936 an outbreak of respiratory disturbances among workers in a North Carolina mill called attention to the need of preventive measures to eliminate the health hazard. As reports from other mills appeared from time to time, steps were taken to control card room dust by installing vacuum strippers and grinders and ventilators. The workers are given frequent physical examinations, and those who exhibit excessive sensitivity to the cotton dust are urged to seek other employment. There is no specific treatment for byssinosis. Removal from exposure should be the first step if the worker appears to be susceptible, and then symptomatic or preventive treatment is instituted. In the late stages treatment can be at best only palliative, because irreversible structural changes have taken place in the lungs. Johnstone recommends for the treatment of dust diseases general tonics, vitamins, adequate diet, cough mixtures, mild narcotics and limited activity.

Journal of Lab and Clinical Medicine, St Louis
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- Distribution and Pollination Times of Important Hay Fever Producing Plants in United States P M Gottlieb and E Urbach—p 1053
- Surface Films Formed by Blood Plasma and Serum of Patients with Chronic Arthritis C W Scull and R Pemberton—p 1070
- Vitamin A and Detoxication of Monobromobenzene F L Haley and G S Samuelsen—p 1079
- Syringadenitis Suppurativa Tropicalis (Complication of Lichen Tropicus) Histologic Appearance and Etiologic Considerations Particularly as to Possible Relationship of Ascorbic Acid and Carbohydrate Metabolism F Reiss—p 1082
- Diffusion of Dyes in Ethylene Glycol Gels Frances C Brown and E E Reid—p 1093
- Seasonal Variations in Some Physiologic Variables M A Wenger—p 1101
- Effect of Continued Sulfanilamide Ingestion on Acid Base Equilibrium of Dog A H Free, D E Bowman and D F Davies—p 1109
- Protein Hydrolysate in Regeneration of Serum Protein in Hypoproteinemic Rat D B Sabine and H R Schmidt—p 1117

Journal-Lancet, Minneapolis
59 163-192 (June) 1943

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- Health Trends in University of Michigan Women Students Margaret Bell and Claire E Healey—p 172
- Syphilis Serology in North Dakota M E Koons—p 177
- Complaint and Situation in College Health Work T Raphael and L E Himler—p 182
- Variable Pulmonary Infiltration Association with Boeck's Sarcoid Case Report C A McKinlay—p 185

Journal of Nat Cancer Inst., Washington, D. C
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- Quantitative Experiments on Production of Subcutaneous Tumors in Strain A Mice with Marginal Doses of 3, 4 Benzpyrene J Letter and M J Shear—p 455
- Degradation of Cystine by Normal Liver but Not by Transplanted Hepatomas J P Greenstein—p 491
- Hydrogen Ion Concentration of Normal Liver and Hepatic Tumors. H Kahler and W v B Robertson—p 495
- Quantitative Analysis of Dose Response Data Obtained with Three Carcinogenic Hydrocarbons in Strain C3H Male Mice. W R Bryan and M B Shumkin—p 503
- Wavelength Dependence of Tumor Induction by Ultraviolet Radiation H F Blum—p 533
- Neoplasms and Other Lesions of Eye Induced by Ultraviolet Radiation in Strain A Mice S W Lippincott and H F Blum—p 545
- Changes Induced in Strain of Fibroblasts from Strain C3H Mouse by Action of 20 Methylcholanthrene Preliminary Report. W R Carle—p 555
- Morphology of Sarcomas Derived from Fibroblasts Previously Treated with 20 Methylcholanthrene in Vitro Preliminary Report. A Nettleship—p 559
- Study of Spontaneous Mouse Rhabdomyosarcoma. A Nettleship—p 563

Kansas Medical Society Journal, Topeka

44 181-216 (June) 1943

- Fundamentals of Psychiatry I N Theory of the Unconscious. W C Menninger—p 183
- Case of Pseudohermaphrodite with Exstrophic Bladder S L Loewen and L O Rupe—p 186
- Rickettsias and Pathogenic Viruses Our Present Orientation F A Carmichael—p 189

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- Procurement and Assignment Service for Physicians, Dentists and Veterinarians—Responsibilities, Accomplishments and Future Problems H S Dichtl—p 218
- Histoplasmosis Report of Case with Brief Review of Literature. B Boltjes—p 226

Michigan State Medical Society Journal, Lansing

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- Diagnostic and Therapeutic Problems of Obesity E L Sevringhaus—p 530
- Problem of Alcohol Addiction Present Day Therapy R G Tuck—p 536
- Radiocurability of Neoplasms C E Nurnberger—p 541
- *Treatment of Psoriasis L A Brunsting—p 546

Treatment of Psoriasis—The method recommended by Brunsting is the combined use of crude coal tar byunction and of ultraviolet irradiation, a procedure first elaborated by Goeckerman. Crude coal tar ointment in a strength of from 2 to 6 per cent is used generally, excepting on the scalp and nails, where an ointment containing from 10 to 20 per cent ammoniated mercury is used. The patient is thoroughly bathed with soap and water to soften and facilitate removal of the scales. The trunk and extremities are thoroughly anointed with the tar ointment and suitable clothing is provided, such as loosely fitted underwear, pajamas or a covering of gauze. At bedtime additional ointment is applied to the body and scalp when needed. The next morning the tar ointment is smoothed with an oil to the consistency of a thin film over the entire body. Ultraviolet irradiation is carried out daily in increasing dosages. It is desirable to secure a brisk erythema short of a burn. Infiltrated plaques and the scalp may be subjected to more intensive treatment by protection of the surrounding skin by paper or cloth, but it is essential to irradiate the entire surface of the body. After the ultraviolet treatment a bath and shampoo again are in order and the ointments are reapplied. A considerable proportion of psoriatic persons also are subject to arthritis. The most common site of involvement in the early stages is the terminal phalanges of the fingers or toes, gradually the larger joints may become involved, even the spinal column, and when the disease is advanced the picture may resemble that of arthritis deformans. The treatment of psoriatic arthritis depends on prompt recognition and thorough control of the psoriasis by the use of crude coal tar and ultraviolet rays. The affected joints are treated as in other forms of arthritis. It is

wise to bring into play all the auxiliary forces, such as rearrangement of the diet and thorough elimination of foci of infection. Nonspecific treatment which provokes fever, such as hot baths, hyperthermia or the injection of foreign protein, is useful. Sun bathing is recommended strongly, and often a change to a sunny, dry and equable climate is beneficial. Roentgen therapy is practicable when there is early involvement of the joints of the hands and feet.

New England Journal of Medicine, Boston

228 773 808 (June 17) 1943

Medical Aspects of Absenteeism L R Daniels—p 773
Roentgenologic Diagnosis of Right Sided Enlargement of the Heart M L Sussman, A Crisman and M F Steinberg—p 777
Prognosis in Cases of Serofibrinous Pleurisy J E Farber—p 784
Epidemiologic Aspects of Food Borne Disease (continued) V A Getting—p 788

228 809 840 (June 24) 1943

How Best to Eat Under War Conditions F J Stare—p 809
Spina Bifida and Cranium Bifidum IV An Unusual Nasopharyngeal Encephalocele F D Ingraham and D D Matson—p 815
Hemorrhage and Purpura Caused by Dicoumarin Report of Case A Cahan—p 820
Epidemiologic Aspects of Food Borne Disease (concluded) V A Getting—p 823

229 1-32 (July 1) 1943

*Subdiaphragmatic Abscess in Children W E Ladd and H Swan—p 1
Tidal Drainage and Cystometry in Treatment of Sepsis Associated with Spinal Cord Injuries Study of 165 Cases D Munro—p 6
Hip Nail Determiner A R Gardner and G Middlebrook—p 14
Peripheral Vascular Disease R W Wilkins and C K Friedland—p 16

Subdiaphragmatic Abscess in Children—A subdiaphragmatic abscess complicating the postoperative course in a 3 year old boy with a ruptured appendix. Induced Ladd and Swan to review the cases previously seen at the Children's Hospital of Harvard Medical School. Fourteen patients have been seen in whom an abscess in the subdiaphragmatic space has been recognized. Eleven of these were treated surgically with one death, the other 3 had a fulminating infection and died. Post mortem a subphrenic abscess was found as one among multiple manifestations of a generalized sepsis. The symptomatology of subdiaphragmatic abscess showed considerable variation in the reviewed cases, but it appears that in children at least three different types are encountered. These roughly parallel the different modes of origin of the infection. The first group comprises cases in which the subphrenic infection is part of a widespread intra-abdominal suppurative process. The second group, in which the subphrenic infection complicates the course of an acute appendicitis with rupture of the appendix, is the type most commonly seen. The third group, perhaps the most interesting and difficult to diagnose, comprises cases in which the subphrenic abscess is metastatic and is at once the chief or only disease present. These patients have a history of upper respiratory infection, otitis media or recurrent superficial staphylococcal infection. This is followed some days later by the vague and insidious onset of mild malaise and anorexia associated with low grade pyrexia. These symptoms persist and there begin occasional attacks of abdominal pain. These symptoms gradually increase over a period of one to three months until the patient is brought to the hospital because of the appearance of a mass in the upper part of the abdomen. It is generally agreed that early and adequate drainage is the correct treatment for subphrenic abscess. In this series 11 patients underwent operation for drainage of a subphrenic abscess, with one death, a mortality of 9 per cent. There were 5 cases in which a direct incision was made and 2 in which the peritoneum was stripped from the diaphragm, making 7 in which there was an extracapsular approach. These patients had a much shorter and better convalescence than did those who had a trans-serous approach. The extracapsular approach is the one of choice.

New Orleans Medical and Surgical Journal

95 531-578 (June) 1943

Hypogastric Sympathectomy with Special Reference to Surgical Anatomy of Superior Hypogastric Plexus B B Weinstein—p 534
Human Serum and Plasma in Diseases of Children E S Platon—p 547
Duodenal Diverticulitis Acute and Chronic D C Browne and G McHardy—p 553
Bagasse Disease of Lung W A Sodeman and R L Pullen—p 558

New York State Journal of Medicine, New York

43 1183-1278 (July 1) 1943

Summary of Present Treatment of Wounds and Burns R Hayden—p 1213
Recent Trends in Psychotherapy L R Wolberg—p 1220

43 1279-1374 (July 15) 1943

Treatment of Severely Burned Patient with Special Reference to Controlled Protein Therapy E B Mahoney and J W Howland—p 1307
Urology in Industry G E Slotkin—p 1316
Urinary Extravasation (Periurethral Phlegmon) New Concept of Pathogenesis and Treatment E O Finestone—p 1320
Epididymitis Its Relationship to Trauma and Compensation R B Henline and W Yunck—p 1325
Study of Headaches Following Diagnostic Spinal Taps H Adler—p 1328
Vitamins for Gray Hair J J Eller and L A Diaz—p 1331
Lesions of Anorectal Region Associated with Symptoms of Prostatism J A Lazarus—p 1333
Thyroidectomized Patients After Ten Years Analysis of 100 Consecutive Cases A H Noehren—p 1338

North Carolina Medical Journal, Winston-Salem

4 197-240 (June) 1943

President's Address Immediate Responsibility of Organized Medicine D B Cobb—p 197
Psychotherapy Within Psychosomatic Medicine M H Greenhill—p 203
Hormonal Approach to Carcinoma of Prostate E P Alyea and A F Henderson—p 212
Roentgen Manifestations of Gout S Kamberg—p 219

4 241-272 (July) 1943

Functions of County Medical Society G L Carrington—p 241
Requisites of Good County Medical Society President V S Caviness—p 242
Functions of County Medical Society Secretary O L McFadyen—p 245
Treatment of Hypertension in Light of Modern Experimental Investigations A Grollman—p 246
Some Aspects of Mental Hygiene or Preventive Psychiatry J W Vernon—p 251
Acute Leukemia as Terminal Event in Polycythemia Vera Report of 2 Cases with Autopsies O C Hansen Pruss and E G Goodman—p 254
Foreign Body in Stomach Report of Unusual Case H M Starling and C R Duncan—p 258

Public Health Reports, Washington, D C

58 857-892 (June 4) 1943

Caries Fluorine Hypothesis and Suggested Study to Test Its Application D B Ast—p 857

58 893-936 (June 11) 1943

Blueprint for Conquest of Hunger T Parran—p 893
*Dermatitis from Resin Glue in War Industries L Schwartz S M Peck and J E Dunn—p 899
Activities of State and Local Industrial Hygiene Services in War Year Victoria M. Trasko—p 904

58 937-968 (June 18) 1943

Poliomyelitis in United States in 1942 and Summary of Its Prevalence from 1933 to 1942 Inclusive C C Dauer—p 937
Leptospirosis in Rats (R. Norvegicus) In and About Washington D C Evaluation of Methods Used for Diagnosis C L Larson—p 949
Effect of Arsenates on Storage of Lead L T Fairhall J W Miller and F L Weaver—p 955

Dermatitis from Resin Glue in War Industries—Schwartz and his associates point out that an increase in the use of glues in the manufacture of wood substitutes has resulted in an increase in occupational dermatitis among workers in these industries. Glues can be classified with respect to their composition as (1) protein glues, (2) natural resin glues, (3) synthetic resin glues and (4) combinations of the foregoing. In the factories inspected in the course of this study the urea-formaldehyde and the phenol-formaldehyde resin adhesives caused most of the dermatitis. In making plywood for planes and gliders those who apply the cold liquid glues and those who apply the glue tapes are the ones most likely to be affected with dermatitis. The parts most often affected are the palms. The dermatitis begins in some workers as early as the third day after exposure (the primary irritant effect of the glue), while other workers may be exposed several weeks before it occurs. In factories where glass cloth is used workers thought the glass fabric was the cause of the dermatitis but patch tests

showed that the phenol-formaldehyde molding powder was responsible. The treatment for dermatitis caused by glues is the same as for other forms of contact dermatitis. Where there are edema, vesicles and oozing, only soothing wet dressings should be used, such as solution of boric acid, solution of aluminum acetate (Burow's solution) and 3 to 5 per cent tannic acid solution, thus last on parts other than the face or neck. When the eruption begins to dry and crust, mild fatty base ointments such as those of boric acid, calamine or zinc oxide should be used. Workers with mild eruptions should be given protective clothing and should be treated on the job in order to give them the chance to become "hardened" (if the dermatitis is caused by allergy) and to learn how to protect themselves (if it is due to primary irritation). To prevent dermatitis the management should provide suitable exhausts to draw away all irritant dusts or fumes. Clean coveralls should be provided daily for workers exposed to irritant glues, dusts and fumes. Workers who apply the glues should be provided with impervious gloves made either of washable leather or fabric lined rubber and sleeves and aprons of impervious materials. The sleeves should fasten over the gloves at the wrist to prevent irritants from falling into the gloves. Facilities should be provided so that workers can frequently wash glue from the gloves and the skin. The brushes and the sponges used for gluing should be washed or changed about every two hours, and workers should be cautioned against touching the face and other parts of the body with glue soiled fingers, gloves or tools.

Surgery, St Louis

14 1-156 (July) 1943

- Crile, Kelly, Lane R. Matas—p 1
Kenny versus Orthodox Treatment of Anterior Poliomyelitis J. A. Key—p 20
Acute Perforated Gastric and Duodenal Ulcers F. V. Paletta and W. R. Hill—p 32
Actinomycosis of Stomach and Duodenum Report of 2 Cases E. W. Shearburn—p 38
Lipomas of Gastrointestinal Tract with Special Reference to Small Intestine Including Ileum Review of Literature and Report of 6 Cases L. E. Schottenfeld—p 47
Rectal Stricture Due to Lymphogranuloma Venereum Treatment with Sulfonamide and Frei Antigen H. R. Seidenstein—p 73
Murphy Button in Esophagogastrostomy L. Miscall and B. B. Clark—p 83
*Renal Circulation After Compression of Renal Artery According to Method of Goldblatt Study of Influence of Renal Venous Runoff on Experimental Hypertension F. P. Corrigan and I. Pines—p 88
*Sulfonamide Therapy in Actinomycotic Infections. C. Lyons, Cora R. Owen and W. B. Ayers—p 99
Solitary Eosinophilic Granuloma Report of Case G. A. Kernwein and F. B. Queen—p 105
Study of Physical Factors Concerned in Inflammation III Fixation of Bacteria in Inflamed Tissues C. J. Bellis—p 111
Unusual Intra Abdominal Foreign Body H. T. Winkle—p 122
Traumatic Rupture of Spleen with Delayed Hemorrhage with Reference to Condition as Complication of Rib Fractures, Report of 2 Cases R. L. Waugh and J. A. Prior—p 125
Surgical Significance of Middle Palmar Septum of Hand J. E. Flynn—p 134
Early Postoperative Walking II Collective Review B. Newburger—p 142

Renal Circulation After Compression of Renal Artery

—The purpose of this study by Corrigan and Pines was to check whether and to what degree the ischemia of renal tissue shares in the production of hypertension and, if not, which other factor can be made responsible for the appearance of high blood pressure. They examined the possibility of arterial hypertension being dependent on the relative increase of local venous pressure as compared to the pressure on the arterial side of the kidney. They sought to increase the venous runoff and to diminish the venous pressure after the Goldblatt maneuver had been performed. In order to accomplish this they elevated the kidneys sufficiently to straighten the course of the renal veins. This added the force of gravity to the vis a tergo in certain positions of the animal, prevented the collapse of venous walls and, by establishing a closer contact between the renal vein and artery, increased the effect of arterial pulsation on the movement of blood in the renal vein. This procedure was applied only to animals that had developed hypertension. In the first group of dogs the procedure was applied to kidneys the renal arteries of which were previously constricted, in the second group of dogs to the intact opposite kidney with simultaneous ligation of the renal artery so that both renal arteries

were ligated and only one kidney was elevated, and in the third group of dogs to the intact opposite kidney without ligating the ipsilateral artery, so that one renal artery was ligated and the opposite kidney elevated in the manner already described. In all cases there was a decided fall of blood pressure. These results were particularly striking in the second group, in which, following constriction of both arteries, a further increase of blood pressure could be expected. Results of their experiments are confirmed by the clinical experience of McCann and Romansky and of Riskind and Greene, who have established that the hypertension which accompanies the renal ptosis or renal torsion can be actively eliminated as soon as the incorrect position of the kidney is improved by a surgical operation or by an abdominal belt. The decisive factor, however, in the authors' opinion consists not in the reduction of the lumen of the renal artery because of the renal ptosis but in the impeding of the venous outflow in these conditions and in the fact that the restoration of the kidneys to their right place has had its effect on arterial blood pressure through improvement of the venous return. They conclude that hypertension depends on the disturbance of the balance between the pressure on the arterial and on the venous side of the kidney. When this balance is disturbed in favor of the venous pressure, stasis probably takes place in the renal capillaries and primary renal circulation is short-circuited through arteriovenous shunts. Consequently the tissue responsible for hypertension begins to suffer from inadequate supply of blood and production of a hypertensive substance is begun. When the balance between the pressure in the arterial and venous sides of the kidney is restored the production of hypertensive substance will cease, perhaps through reestablishment of an efficient oxygenation.

Sulfonamide Therapy in Actinomycotic Infections—

The 5 cases of actinomycotic infections reported by Lyons et al emphasize the necessity for long and continuous sulfonamide administration to effect healing and maintain remission of the disease. Sulfanilamide supplemented the surgical management of 5 patients infected with actinomyces. The etiologic agent was an anaerobic *Actinomyces bovis* in 4 cases, one cervicofacial, one pulmonary, one pulmonary and abdominal and one abdominal infection. An aerobic non-acid fast actinomyces was found in another case in which there was an abscess of the buttocks. In every instance clinical improvement was noted within the first three weeks of sulfonamide treatment. This improvement was not maintained unless the sulfonamide compound was continued for a considerably longer period of time. Nine months of treatment with 4 Gm daily produced healing for two years in 1 case. Other patients treated with smaller doses for equal or longer periods of time showed recurrent abscesses and fistulous sinuses, but all patients appear improved. The dramatic initial response of these infections to sulfonamides is somewhat misleading. The drugs induce a remission and apparently diminish the intensity of the recurrence, but it can hardly be claimed that the disease has been completely cured. The necessity of surgical excision of the infection is clear. Surgical excision of all the infected tissue is the most effective treatment of the disease. Sulfonamide therapy is a valuable adjuvant to the surgical management of actinomycotic infections.

West Virginia Medical Journal, Charleston

39 233-264 (July) 1943

- Optic Atrophy F. V. Gammage—p 233
Pharyngoesophageal Diverticulum Treatment by One Stage Disposition of Sac R. H. Edwards—p 241
Use of Serum, Plasma and Blood in Gynecology and Obstetrics A. P. Hudgins—p 243
Virus Pneumonia W. C. Stewart—p 248
Catalase and Peroxidase in Pathologic Urine. L. I. Halley—p 252

Wisconsin Medical Journal, Madison

42 657-748 (July) 1943

- Prostatic Surgery at Wisconsin General Hospital, 1940-1941 I. R. Sisk and P. M. Cornwell—p 679
Cesarean Section Problem in Wisconsin R. S. Cron—p 683
Clinical Applications and Complications of Sulfonamides. W. W. Spink—p 688
Modern Status of Sulfamido Group of Drugs Used in Urology T. L. Pool—p 693
Roentgen Study of Virus Pneumonia H. P. Doub—p 696
Present Day Treatment of Varicose Veins H. O. McPheeters—p 701

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Journal Obst. & Gynaec. of Brit. Empire, Manchester
50 161-240 (June) 1943

- Unsuspected Tuberculosis of Endometrium A M Sutherland—p 161
Further Investigations on Histidine and Histamine Metabolism in Normal and Pathologic Pregnancy R Kapeller Adler—p 177
Prolapse Following Hysterectomy J Hamilton—p 184
Primary Abdominal and Primary Ovarian Pregnancy with Report of 1 Case of Each Variety R C Thomas—p 189
Puerperal Tetanus with Report of Case Following Septic Criminal Abortion R C Thomas—p 196
Prognostic Significance of Rise in Temperature in Course of Radium Treatment of Cancer of Cervix Gertrude Goldscheider—p 202
Unusual Case of Intraperitoneal Bleeding from Ruptured Uterine Vein During Pregnancy Kathleen M D Harding and A B Concanon—p 208
Excretion of Ketosteroids in Human Pregnancy Urine in Relation to Sex of Fetus H Burrows D MacLeod and F L Warren—p 212
Division of Zygote Producing Trophoblast Only V Bonney—p 217
Intrapelvic Tuberculosis J R Goodall—p 219
Local Anesthesia in Vulval and Vaginal Surgery C P Brentnall—p 226

Lancet, London

2 33-62 (July 10) 1943

- Sensory Areas of Brain E D Adrian—p 33
Pulmonary Tubercle in Children Influence of Evacuation on Its Incidence. Marcia Hall—p 35
*Bactericidal Action of Estrogens G H Faulkner—p 38
Gunshot Aneurysm of Carotid Artery R S Handley and M Oldfield—p 40
Pellagra in Psychiatric Practice Twelve Recent Cases S W Hardwick—p 43

Bactericidal Action of Estrogens—Faulkner observed that diethylstilbestrol possesses some degree of bactericidal activity. Other substances possessing estrogenic properties were examined in order to see whether there was any correlation between the estrogenic and the bactericidal activities. Estradiol, estrone, diethylstilbestrol, hexestrol and diethoxytriphenylbromoethylene were investigated. The organisms used were all recently isolated from material sent to the laboratory for bacteriologic investigation. The strains of *Corynebacterium diphtheriae* were all virulent to guinea pigs. All the hemolytic streptococci exhibited beta hemolysis, and strains 4, 5 and 6 belonged to Lancefield's serologic group A. Faulkner states that diethylstilbestrol is bactericidal and in lesser concentrations bacteriostatic to gram positive cocci, *Corynebacterium diphtheriae* and *Neisseria catarrhalis*. No inhibitory action was noted on the gram negative bacilli. The minimal lethal concentration varies somewhat between these organisms, but in all those recorded it lies between 1 5,000 and 1 500,000. Tubercle bacilli were killed by incubation in vitro with diethylstilbestrol 1 5,000. Hexestrol also possesses bactericidal properties. Other estrogenic substances (estrone, estradiol and diethoxytriphenylbromoethylene) have not been found to have bactericidal action. The bactericidal activity of diethylstilbestrol is reduced in the presence of serum.

2 63 90 (July 17) 1943

- Anaerobic Infections of War Wounds in Middle East. J D MacLennan—p 63
March Fracture Series of 15 Cases from R. A F G Flavell—p 66
*Bacillary Dysentery Chemotherapy in Its Treatment An Experience of 492 Cases in Middle East E Bulmer and W M Priest—p 69
*Sonne Dysentery Sulfapyridine in Its Treatment. R Swyer—p 71
*Propamidine in Surgical Infections Clinical Study E C B Butler—p 73
Method of Producing Experimental Granulating Wounds H E Hutchison—p 75

Bacillary Dysentery—Bulmer and Priest assess the value of chemotherapy in bacillary dysentery on the basis of experience of eighteen months in the Middle East covering two summers. A sorting of cases by stool inspection shows two groups: there is the mildest type without blood and mucus in the stools, familiarly known as "Guppy tummy," and arbitrarily called acute catarrhal enteritis, this is an unpleasant condition, often febrile associated with considerable abdominal pain and frequently needing hospital treatment. Even in this "mildest" type the stay in hospital of 600 patients averaged ten days. True dysentery is distinguished by the presence of blood and mucus in the stools

and is a much graver disease, the average duration of stay in the hospital of 600 patients was twenty days. A series of 483 patients with nonamebic diarrheas, the majority being bacillary dysentery, were treated with sulfonamide drugs. Of 323 patients treated with sulfaguanidine the average stay in the hospital was substantially reduced as compared with that of 600 controls. Of 97 patients with acute dysentery treated with sulfapyridine the stay also was reduced, but the patients experienced nausea, vomiting and malaise. Of 63 patients treated with sulfanilamide the stay in the hospital was not reduced. The authors conclude that 1 Sulfaguanidine is a specific drug in the treatment of acute, subacute and chronic bacillary dysentery, it is almost nontoxic and does not upset the patient. It is probable that its routine use would diminish the stay in the hospital by one half. 2 Sulfanilamide in the form of crushed tablets does not have any definite effect in dysentery. 3 Sulfapyridine is of considerable value in dysentery but is not so effective as sulfaguanidine. Its unpleasant effects make its use undesirable unless sulfaguanidine is not available.

Sulfapyridine in Sonne Dysentery—According to Swyer the incidence of Sonne dysentery has been increasing in Britain. Consequently any procedure which shortens the illness or reduces the number of carriers becomes of great importance. The series here described comprised 92 patients with Sonne dysentery, 57 of whom were treated with sulfapyridine and 35 were used as controls. Except at week ends, daily bacteriologic examinations of feces and rectal swabs were done in all chemotherapy series, and twice weekly in controls, on desoxycholate-citrate agar. Treatment with sulfapyridine by mouth was instituted immediately on isolation of *Bacterium sonnei* and was continued until a negative report on the feces and on rectal swabbing was obtained. Administration of the drug was then stopped and after an interval of forty-eight hours further bacteriologic examinations were made. If these proved negative, examinations were repeated until a minimum of three consecutive negative stools and rectal swabs had been obtained. If after forty-eight hours the stool or rectal swabbing reverted to positive, the course of treatment was repeated. Careful watch was kept for toxic symptoms of chemotherapy, granulocytopenia being guarded against by leukocyte counts. In the chemotherapy group the average time required to obtain bacteriologic clearance was a fourth of that in the control group (five compared with twenty-one days). The period required to obtain apparently normal stools in the chemotherapy group was halved (nine compared with twenty days). No bacteriologic relapses after three days of the negative state arose in the drug treated patients but in controls six such relapses developed at periods ranging from seven to thirty-six days after apparent clearance.

Propamidine in Surgical Infections—Butler points out that propamidine has been shown to retain its bacteriostatic action in the presence of pus in concentrations which do not prevent phagocytosis, a property which makes it useful in the treatment of infected wounds. The drug is effective in staphylococcal infections and is extremely potent against the hemolytic streptococcus but is of little use against *Proteus vulgaris* and *Pseudomonas aeruginosa*, in vitro against *Clostridium welchii*; the activity is probably of the same order as against *Staphylococcus aureus*. The present paper describes a series of cases and suggests an additional method of using the drug. Two preparations have been employed, a jelly or a solution. Of 10 cases reported, 7 illustrate the value of propamidine jelly in the treatment of recent war wounds, infected hands and certain types of bone infection. 3 show that a 1 per cent solution of propamidine injected into infected joint or empyema cavities may help to overcome the infection and sometimes make surgical intervention unnecessary. The jelly base of the propamidine preparation is a tissue irritant and must not be used if the wound is to be sutured. When used round open wounds it may cause redness of the skin, which should be protected by petrolatum. If the drug is used for more than ten days the production of granulation tissue is often stimulated to an extent which is undesirable in superficial lesions but useful in filling up deep cavities. Propamidine jelly does not penetrate soft tissues or bone and is essentially a local bacteriostatic. Propamidine solution has mainly been used against staphylococcal infections.

Medicina, Buenos Aires**3 259-385 (April) 1943 Partial Index**

- Importance of Bile in Absorption of Vitamin K R Bay, C A Tranturi and R F Brufi—p 259
 *Compensatory Myeloid Metaplasia of Spleen Importance of Differentiation from Chronic Myeloid Leukemia A Pavlovsky—p 287
 Sudden Death A C Taquini and L de Soldati—p 328

Compensatory Myeloid Metaplasia of Spleen—Pavlovsky stresses the importance of a differential diagnosis between compensatory myeloid metaplasia of the spleen in aplasia of the myelopoietic organs and chronic myeloid leukemia. He observed 7 cases of the former condition and 99 cases of the latter. High voltage roentgen irradiation of the spleen, indicated in chronic myeloid leukemia, is contraindicated in compensatory myeloid metaplasia. A diagnosis of compensatory myeloid metaplasia of the spleen is made on clinical symptoms similar to those of chronic myeloid leukemia but of long duration, acute splenomegaly, changes in the peripheral blood similar to those of chronic myeloid leukemia or of chronic myeloid subleukemia, certain changes of the long bones and lack of tenderness over the sternum. The diagnosis should be verified by the examination of the sternal bone marrow and of spleen tissue obtained by puncture. The bone marrow is either aplastic or hypoplastic, whereas the splenic tissue is transformed into myeloid tissue. In 5 of the group of 7 cases of compensatory myeloid metaplasia of the spleen reported by the author, roentgen irradiations of the spleen were done. The 3 patients who received large doses of roentgen rays to the spleen rapidly developed symptoms of acute panmyelophthisis, aplastic anemia and thrombopenic purpura respectively. Immediate discontinuation of irradiation and attempts to control the disease failed. Two patients who had weekly irradiations with small doses rapidly grew worse. The symptoms were controlled by immediate discontinuation of the irradiations and the exhibition of hematocrits. The last 2 patients and those given hematocrits are living and are in a fairly good state of health. One of them is still living with compensatory myeloid metaplasia of more than twenty years' duration.

Medicina, Mexico, D F**23 205-230 (June 25) 1943 Partial Index**

- Pathology of Brucellosis H Tavar Mancera—p 205
 *Natural Infection of Cats with Typhus L Mazzotti and G Varela—p 229

Natural Infection of Cats with Typhus—Mazzotti and Varela experimented on domestic cats living in or near the wing for patients with infectious diseases in the General Hospital of Mexico City. Agglutination tests for *Proteus typhi* gave positive results with the blood of the animals. The tests were strongly positive with the blood of some animals. Guinea pigs inoculated with the brain of either cadavers of patients who died with typhus or of rats that had been previously inoculated with the brain of the cats developed fever and scrotal inflammation (Neill-Mooser positive sign). Extracellular and intracellular rickettsiae in large numbers were observed in cultures of the tunica vaginalis of inoculated guinea pigs. The authors direct attention to the presence of natural typhus in domestic cats and the possible role of these animals as temporary reservoirs of typhus. Natural infection of cats probably occurs through fleas or through ingestion of infected material.

Prensa Médica Argentina, Buenos Aires**30 689-734 (April 21) 1943 Partial Index**

- Hyperinsulinism Due to Adenoma of Insular Cells A Ceballos and S Rosenblatt—p 689
 *Procaine Hydrochloride Spinal Anesthesia and Altitude P Perovic—p 706
 Traumatic Hernia of Testicle D Calisti—p 709

Spinal Anesthesia and Altitude—Perovic found that the effects of spinal anesthesia induced with procaine hydrochloride diminished with increase in altitude. The dose varies in the following proportions: from 0.08 to 0.10 Gm at altitudes of 500 meters over sea level, from 0.10 to 0.12 Gm at altitudes between 1,000 and 1,500 meters, from 0.12 to 0.14 Gm at altitudes between 2,000 and 2,500 meters, from 0.14 to 0.16 Gm at altitudes between 3,000 and 4,000 meters and from 0.14 to 0.17 Gm at altitudes over 4,500 meters above sea level. The

author believes that increased altitude causes increased concentration of organic and chemical substances in the cerebrospinal fluid, which is the factor in diminishing the effect of the anesthetic on the central nervous tissues.

Revista de la Asoc. méd. Argentina, Buenos Aires**57 149-218 (April 15-30) 1943 Partial Index**

- *Pulmonary Blastomycosis with Cavitation E L Capdehourat, R. A Gini and M E Jorg—p 149
 Sulfanilamide in Surgery J Nasio—p 157
 Antidiuretic Action of Pitressin in Acute Nephritis R Q Pasqualini and A C Avogadro—p 168
 Therapy of Obstetric Shock G Ricci, N Rodriguez Miranda and M Balaguer—p 175

Pulmonary Blastomycosis with Cavitation—According to Capdehourat and his collaborators pulmonary blastomycosis with cavitation is rare. The case they report is the second in the literature. A woman aged 26 presented symptoms simulating pulmonary tuberculosis of five years' duration. The bacteriologic examination of the sputum was negative for tubercle bacilli but showed numerous monilia. X-ray examination of the lung showed a shadow of a large solitary cavity. Sulfonamide therapy was without effect. Intravenous injections of chimoferon in doses of from 5 to 10 cc and sodium iodide or potassium iodide in daily dose of 0.4 Gm brought about a clinical and roentgenologic cure of the patient. Repeated x-ray examinations of the lung demonstrated disappearance of the cavity more than eight months after discontinuation of the therapy.

Zentralblatt für Chirurgie, Leipzig**69 81-128 (Jan 17) 1942 Partial Index**

- Radium Treatment of Hemangiomas in Children E Günsel—p 82
 *Malignant Exophthalmos P Sunder-Plassmann—p 88
 *Fatigue Fractures and Zones of Transformation in Bone F Schröder—p 92

Malignant Exophthalmos—According to Sunder-Plassmann there are cases of exophthalmic goiter in which the exophthalmos continues to increase after removal of the thyroid. These are cases of malignant exophthalmos. In the mild form of malignant exophthalmos conjunctival excision has been effective, but there are also cases in which the exophthalmos increases to a point of perforation of the eye. The author reports a case in which enucleation of the eyes became necessary. In another case conservative measures proved ineffective. Both eyes had advanced corneal ulcers, and spontaneous perforation seemed imminent. The patient required morphine for the control of the pain. The visual capacity was practically nil. As a last resort it was decided to attempt the operation described by Naffziger in 1933, which that author had successfully employed in 6 cases. Bilateral trepanation was done and then by the intracranial approach complete orbital decompression was effected, also decompression of the roof of the nerve canal. As had been observed by Naffziger, the eye muscles were enormously enlarged and both optic nerves showed extreme edema. The patient tolerated the operation well. The exophthalmos receded rapidly, and complete closure of the eyes became again possible. The corneal ulcers healed. The patient regained normal visual capacity and her general condition is excellent.

Fatigue Fractures—Schröder shows that the pathologic changes caused by overexertion of bones become manifest in two distinct forms as fatigue fracture and as "umbauzone" (zone of transformation). The fatigue fracture represents a typical fracture. The fracture line is usually delicate, there is considerable callus formation and the pain is severe. The zone of transformation shows a wide area of reduced density, but there is only slight or no callus formation and mild pain. Both lesions are observed at the characteristic sites of greatest exertion, but, whereas fatigue fracture occurs only in healthy bone tissue, zones of transformation develop chiefly in the presence of metabolic disturbances or deficiency diseases. The author reports that zones of transformation appeared in both scapulas, both rami of the os pubis and on the eighth rib on the left side of a woman aged 42. These zones of transformation disappeared after prolonged treatment with vitamin C, and it is concluded that vitamin deficiency played a part in their development.

Book Notices

Health and Physical Fitness By I H Goldberger MD, Assistant Director of Health Education New York City Public Schools and Grace T Hallock Director Welfare Publication Bureau Metropolitan Life Insurance Company Cloth Price \$1.92 Pp 596 with illustrations Boston Ginn and Company 1943

This book by two authors experienced in health education is designed specifically to contribute to the training in health and physical fitness of the high school Victory Corps and in general for high school health education programs. It follows a conventional organization of such textbooks but is exceptionally rich in well conceived illustrations used in the modern manner, including bleedoff, montage, diagrammatic section and partial section technics. Each unit has a challenging set of questions under the title "What Would You Think, Say, or Do If—" and under each of these titles such challenging questions as "A 4 year old child of your acquaintance lost a tooth and his mother said 'It doesn't matter, he'll get another to take its place?'" There are also matching tests, true-false selections, completion tests, extensive suggestions for further study and discussion, and a list of scientific words of which to learn the meaning. Each unit is introduced by a set of "leading questions." The units are effectively entitled, for example, the unit on vision is called "Look!" and, in the same manner, that on hearing "Listen!" The book is interestingly presented and thoroughly practical. It should be a valuable teaching help.

The Pharmacology of the Opium Alkaloids. Part 2 By Hugo Krueger Assistant Professor of Pharmacology St. Louis University School of Medicine Nathan B Eddy Principal Pharmacologist U S Public Health Service and Margaret Sumwalt, Associate Physiologist, U S Public Health Service Supplement No 165 to the Public Health Reports Federal Security Agency United States Public Health Service Division of Sanitary Reports and Statistics Cloth Price \$1.50 Pp 813 1448 Washington D C Supt. of Doc Government Printing Office 1943

The first part of this book offered a dissertation on morphine which provided an excellent informative source for reference. The second part is intended to supplement the other volume and offers concise presentation of pertinent data on codeine, ethylmorphine, dihydromorphine, diacetylmorphine, thebaine, apomorphine, other derivatives of morphine, sinomenine and its derivatives, papaverine and its derivatives, narcotine and its derivatives, narceine and its derivatives, cryptopine and protopine. The book is not for the practicing physician unless he has an unusual interest in the opium alkaloids, it should be available for all teachers and researchers in pharmacology and therapeutics. The material is presented in concise form and its accumulation must represent the labor of almost uncountable searches into the literature by the authors. The bibliography, subject and author indexes are as complete as the reviewer has ever seen.

Urology in General Practice By Nelse F Ockerblad BS MD F.A.C.S Professor of Clinical Urology University of Kansas School of Medicine Lawrence and Hjalmar E Carlson BS A.M MD Instructor in Urology University of Kansas School of Medicine Cloth Price \$4 Pp 383 with 98 illustrations Chicago Year Book Publishers Inc 1943

Had the authors of this little volume adhered to their promise as stated in the preface "to help the general physician do better those things that are within his province in the realm of genito-urinary diseases and to suggest the limits beyond which the best interests of his patients require that he obtain the help of a specialist," this might have been a book of value, but unfortunately they fall far short of the mark. The text starts with the most elementary details of laboratory diagnosis and presently one finds an adjoining chapter on such subjects as kidney ptosis, anomalies of the genitourinary tract and urinary lithiasis, the subject matter of which might cause even a research worker to ponder. The reviewer takes issue with the discussion of nephritis. This chapter may be comprehensive but it has no place in urology. Nephritis is a medical disease. There is no sequence whatever to the arrangement of the subject matter, no orderly presentation even though isolated topics are well discussed. It is most unfortunate that an experienced urologist should write about diseases of the male urethra to the complete exclusion of pathology of the verumontanum about which the general practitioner should know, even though he is not equipped to treat it and so on. In brief this book is neither fish nor fowl, it is smörgåsbord.

Index to Dental Literature in the English Language Including One Hundred and Twelve Periodicals from Australia Canada England India South Africa and the United States Three Years 1939 1941 An Alphabetical Subject and Author Index A List of Dental Books Committee on Library and Indexing Service of the American Dental Association John E Gurley DDS Chairman Cloth Price \$7.50 Pp 282 Chicago American Dental Association 1943

The American Dental Association is to be congratulated on the appearance of this volume of the "Dental Index," covering the years 1939 to 1941, in which a change of style has been effected. Instead of the former numerical system of classification the arrangement is alphabetical according to author and subject. Listing of entries under subjects by title rather than by author and the use of continued column heads would have improved the make-up still further. The subject headings are practical rather than scholarly, but they represent nomenclature in current use. It is hoped that certain wordy headings, inconsistencies in indexing and similar technical defects will be eliminated in future volumes.

How to Prepare for Military Fitness By Lieutenant Colonel François D'Eliaqu Illustrated by Stephen J Voorhies Cloth Price \$1.96 Pp 216 New York W W Norton & Company Inc. 1943

In this compact volume there is an excellent, well edited and adequately illustrated description of the more important methods of physical training. The material is carefully selected from among the more beneficial forms of calisthenics and conditioning exercises as they apply to military personnel. Descriptions of drills, exercises and games are concisely vivid and accurate. The author has subtly drawn on his own experience to add to the effectiveness of the instructions given. Wall scaling and tree climbing, elementary judo, wartime wrestling and boxing unarmed defense and disarming an opponent are especially valuable and timely chapters. Further, to meet current needs, the last portion of the book adequately describes swimming and life saving procedures to be employed in common situations which soldiers and sailors are apt to encounter. Throughout there are many well drawn black and white illustrations which clarify the subject. On the whole it is an excellent handbook on physical training that deserves a wide circulation.

Your Own Story By Marlon L Faegre Assistant Professor of Parent Education Institute of Child Welfare University of Minnesota Minneapolis Paper Pp 52 with illustrations Minneapolis Minnesota Department of Health 1943

This booklet contains a brief story of human and animal reproduction—not animal and human—to which thirty-one of its fifty-two pages are devoted. The remainder is a chapter addressed to parents as to how to use the material in the first part of the pamphlet. The pamphlet could not be more effectively reviewed than in the words of Dr Haven Emerson contained in its introduction "Other states and, in fact, our federal agencies promoting human welfare could not do better than follow Minnesota's example and compete in friendly rivalry of word and design to carry to all parents and children lessons of the hygiene of human reproduction and the bearing of our bisexual structures and functions on personal, family and social soundness of character and happiness. What is here offered is to be unreservedly accepted and recommended for its accuracy and directness of statement and for the spirit and purpose of the language and illustrations used."

Memoirs of a Guinea Pig or Eight Years in a Doctor's Waiting Room By Howard Vincent O'Brien Cloth. Price \$2 Pp 238 with illustrations by Robert Mills New York G P Putnam's Sons 1942

In his middle 40's Mr Howard Vincent O'Brien, who is a clever writer, developed difficulty with his vision—a condition commonly referred to as scotoma. In his search for relief he tried everything, including shock therapy, heat therapy, allergy manipulation of the feet, vitamins, osteopathy, chiropractic and procedures directed toward the intestines and the gallbladder. Apparently he comes to the end of 237 pages still with the scotoma, also with the ability to write an intensely human chapter on "The Care and Feeding of Doctors." Here he disports himself by injecting a few barbs into some of the easily recognized and significant weaknesses of the profession. In the course of his travels he came also under the attention of some of our leading ophthalmologists who will be recognized not only by the mention of their names in the dedication but also by their characterization in the work. This item is recommended especially to ophthalmologists with a sense of humor but also to every doctor with a sense of humor.

sis On the other hand, one could not draw the opposite conclusion in this specific instance. Carefully controlled clinical observations, early in the course of kidney stone formation, are badly needed.

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DESTRUCTIVE LESION OF TERMINAL INTERPHALANGEAL JOINT

To the Editor—A patient aged 48 has had swelling and discharge from the right middle finger for the past six months. This discharge has the appearance of joint fluid. An x-ray film shows that there is rather extensive destruction of the terminal interphalangeal joint of the right middle finger. There is also evidence of some slight bony destruction in the opposing bony surfaces. This involves both the terminal and the middle phalanx. There is no evidence of any osteomyelitis. The findings in this case are quite typical of infectious arthritis. The condition is suggestive of osteoperiostitis aluminosa. With these findings, could you suggest the best method of treating this condition?

R V Jolin, M D, Grand Rapids, Minn

ANSWER—Tuberculosis of a single interphalangeal joint is more common than is the condition referred to as osteoperiostitis aluminosa. Destruction of a finger joint without new bone formation in the region should be considered tuberculosis until proved otherwise. A biopsy is indicated. If the diagnosis is confirmed, amputation of the distal phalanx will give the most certain and most prompt recovery of use of the hand. The alternative method of treatment is long continued splinting of this finger in a position of slight flexion. It should be remembered, however, that a fused interphalangeal joint is a much more serious handicap than is the loss of the distal phalanx of a finger.

PRESERVATION OF LIQUID PLASMA

To the Editor—How long can properly processed liquid plasma be safely kept on a shelf at room temperature and at average refrigerator temperature? Also how often should such plasma be cultured for sterility?

M D, District of Columbia

ANSWER—The preservation of plasma in the liquid state should be avoided as much as possible.

In any case liquid plasma should not be preserved at refrigerator temperature, because of massive irreversible flocculation. If very thorough sterility tests have been performed, the expiration date for liquid plasma kept at room temperature (15 to 30 C) has been set at one year by the National Institute of Health.

It is not necessary to repeat the sterility tests if proper cultural studies were done at the time of pooling the plasma and if the material was not subsequently exposed to contamination.

COCCYGEAL INJURY AND TRAUMATIC ARTHRITIS

To the Editor—A man aged 71 fell out of bed and struck on the lower part of his spine. Considerable pain and disability followed, and an x-ray examination showed a fracture of the last bone of the coccyx—not straight across the bone but slanting. A few weeks after the original injury tenderness developed in one of the lower lumbar vertebrae on pressure, x-ray examination showed no signs of fracture or dislocation, but there was evidence of arthritis. The patient's general condition is fairly good, but it is difficult for him to get about, his legs feeling weak and a certain numbness being present. Bowel and bladder functions are good and with the aid of vitamin B₁ his appetite is satisfactory. I shall appreciate any advice or suggestions for treatment of this patient. Can you give any estimate as to the length of disability?

F S Spearman, M D, Williams, Ariz.

ANSWER—The fact that the pain is in the lower lumbar area would indicate it is not a coccygeal injury that is causing the pain. The discomfort may be due entirely to the arthritis in the lumbar part of the spine, the fall being the contributing factor, causing a traumatic arthritis on top of the old. There is no specific treatment but rest, not necessarily to the point of rest in bed but to the point of moderation in activities, and application of heat to the affected area, preferably radiant heat, along with gentle massage, will do as much as anything. In a man of this age metastatic cancer must be considered, and careful examination of the prostate and inquiry as to gastrointestinal symptoms should be carried out. The length of disability is difficult to estimate, but if traumatic arthritis on top of old osteoarthritis is the basis, the patient should experience considerable improvement in a few weeks.

REACTION TO PITRESSIN TANNATE

To the Editor—A woman aged 40 has diabetes insipidus. I am giving her pitressin tannate into her gluteal muscle. Six months ago she had a reaction. Yesterday she had another reaction from the injection. These reactions came on immediately after taking the injection. I did not see her immediately, but at the time I saw her she had a fever, felt cold and had a feeling of constriction in her chest. Her blood pressure was normal. A small injection of epinephrine increased her discomfort. I gave her a small amount of morphine, after which she felt warm and had some relief. I feel sure this was not a hysterical manifestation, as her temperature was almost 102 F. It seemed to me to be a foreign protein reaction. She remained ill for twenty-four hours, at the end of which time she seemed completely recovered. She is taking these injections at forty-eight hour intervals. Can you give me any more information about this type of reaction, the probability of its recurrence and the probability of its being fatal? What is the treatment? M D, Iowa

ANSWER—The literature relating to the use of pitressin tannate for the treatment of diabetes insipidus is listed below. Reaction to this type of treatment has not been reported. The best suggestion to follow would be to abandon this type of treatment in this particular case and to institute the use of posterior pituitary powder by nasal insufflation. A small amount of the powder, about that which rests on the end of a knife blade or nail file, is simply placed in a tube with atomizer bulb and blown into the nose. This is a much less wasteful method than having the patient attempt to introduce it digitally or to sniff it from a paper. Most patients are controlled with two administrations, one in the morning and one at bedtime. Some patients who do not mind the polyuria and polydipsia during the daytime use it only at night. This method is by far the least expensive method and the one which most patients prefer. It is interesting that 4 of the 8 patients mentioned by Blotner "have discontinued the use of pitressin tannate in oil because they can take pituitary intranasally and avoid injections."

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INTRACTABLE INSOMNIA

To the Editor—A woman aged 66 insists that she is unable to sleep. I have tried everything I can think of or can read about without success. I know of no reason why she cannot sleep. Any advice that you can give me will be appreciated.

M D, Ontario

ANSWER—Intractable insomnia is often extremely difficult to treat. It is important, if possible, to get at the cause of the insomnia, diseases of the central nervous system are especially liable to produce insomnia, and frequently insomnia may be of psychogenic origin. It is most important, therefore, to eliminate organic causes for the insomnia by careful examination of the central nervous system and to investigate possible psychogenic origins. If anything is found, the treatment should be directed toward the disease process causing it. For the simpler types of insomnia without serious organic or functional causes, the following references may be suggested.

- Alvarez, W C Help Your Doctor to Help You When You Have Insomnia, New York, Harper & Brothers, 1942
 Jacobson, Edmund You Can Sleep Well, New York, McGraw Hill Book Company, 1938

APPLICATION OF HEAT OR CHEMICALS TO SKIN OF PATIENT TREATED BY X-RAYS

To the Editor—A patient had intensive x-ray treatment of the front, back and outer hip-thigh regions, with considerable skin reaction. She applied dry heat to the outer aspect of her thigh (in an area treated with x-rays) for the relief of local pain. The x-ray man told her not to do that, for the heat thus locally applied over an irradiated area would much increase the local x-ray skin reaction, making it much worse. Is that true or at least enough true so that external heat should not be used?

Stuart B Blakely, M D, Binghamton, N Y

ANSWER—It is usually inadvisable to use any type of irritation, whether thermal or chemical, on the skin of a patient subjected to x-ray therapy. It is not unusual to have a skin reaction greatly exaggerated following the application of local heat even though the amount of x-rays delivered to the skin is not sufficient to cause a definite skin reaction. It is believed that a patient receiving x-ray therapy should not have heat or irritating chemicals applied to the skin.

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THE EFFECTIVENESS OF TYPHOID VACCINE PREPARED BY THE U S ARMY

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AND

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SANITARY CORPS, ARMY OF THE UNITED STATES

Siler and his co-workers included in their monograph "Immunization to Typhoid Fever"¹ a historical review of the introduction and use of typhoid vaccine in the United States Army. Briefly, typhoid vaccine was introduced on a voluntary basis by F F Russell in March 1909. In 1911 antityphoid vaccination was made compulsory for all military personnel.

From 1909 to 1916 a monovalent typhoid vaccine was used and from 1917 to 1927 inclusive the vaccine was of a triple typhoid (TAB) type containing typhoid, paratyphoid A and paratyphoid B components. In 1928 the paratyphoid B fraction was omitted, followed in 1934 by the omission of paratyphoid A. Monovalent typhoid vaccine was then used exclusively for antityphoid immunization until September 1940, at which time the paratyphoid A and B components were again added. This is the product now used for the immunization of all personnel in the Army, it contains 1,000 million typhoid bacilli and 250 million each of the paratyphoid A and B organisms per cubic centimeter.

The first typhoid culture to be used for the preparation of typhoid vaccine by the biologic laboratories of the Army Medical School was the "Rawlings" strain. This culture was isolated by British investigators from a fatal case of typhoid in 1900 and was being used by the British as a vaccine organism when Russell went abroad in 1908 to observe their methods of preparing typhoid vaccine. The "Rawlings" strain was subsequently used as the typhoid vaccine organism in the Vaccine Department of the Army Medical School from 1909 until late in 1936. During this time it had been maintained in an intermediate stage, neither rough nor typically smooth but tending toward smoothness in its cultural and antigenic characteristics.

EXPERIMENTAL STUDIES

Late in 1934 an exhaustive investigation was begun to determine the relative merits, as immunizing agents of several selected strains of the typhoid organism—

Out of this investigation there emerged a strain of *Eberthella typhosa* of superior immunogenic potency. This culture had been recovered from a chronic typhoid carrier in Panama, and since the first announcement of its use it has been variously referred to as "Boxill," "Panama carrier," "Panama 58" and simply "58." For the purpose of future reference it bears the official designation of *E typhosa* strain 42-A-58" of the Army Medical School culture collection.

This strain of *E typhosa* has been used by the Division of Biologic Products of the Army Medical School since late in 1936 for the preparation of typhoid vaccine, and it is being used currently as the typhoid component of TAB vaccine. Briefly described, it is culturally and biochemically a typical typhoid organism, colonially and serologically smooth, highly virulent for mice, and antigenically complete with a high content of Vi antigen. Before its acceptance by the Division of Biologic Products it had been subjected to every test known to us designed for determining its qualification as a vaccine organism—mouse virulence, agglutinogenic activity and immunogenic potency—and, from the standpoint of production, rate of growth, emulsifying property and stability in salt solution. Added to this were comparisons of its toxicity in human beings with that of other typhoid cultures.

Tests for its immunogenic potency were conducted with test organisms recovered from patients and carriers living in various sections of the United States. When satisfactory evidence had been secured concerning its immunogenic coverage over domestic strains of *E typhosa*, cultures from other parts of the world were sought as test organisms. Two of these foreign strains were obtained, one from China (province unknown), the other from Budapest. In both active and passive immunization tests a vaccine prepared with *E typhosa* strain 42-A-58 produced the same high degree of protection against these imported cultures as it did against the domestic variety of the typhoid organism.

Recently the question of immunogenic coverage afforded by our typhoid vaccine organism has been revived in reference to strains of *E typhosa* prevalent in the Middle East. A doubt has been expressed that our vaccine affords adequate protection against the local Middle East strains, and it has been recommended that the vaccine manufactured locally be used for the immunization of the United States armed forces stationed in that area.²

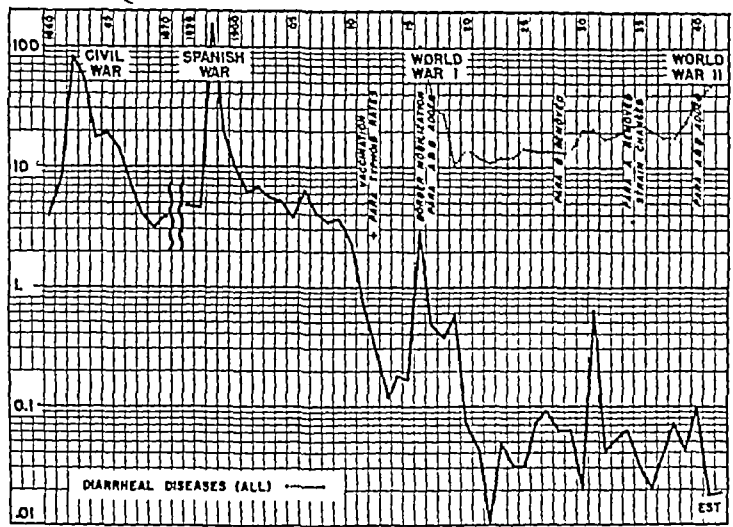
Although this hypothesis is advanced from time to time, it has few advocates among immunologists today. However as a matter of interest the vaccine recommended the typhoid organisms used and some cultures from cases of disease from the area were obtained for comparative immunogenic studies. These cultures were examined for mouse virulence, antigenic content and

¹ Siler J F, Dunkum G C, Longfellow, Don and Luippold G. *Immunization to Typhoid Fever*. Monograph Series No 17. Baltimore: Johns Hopkins Press, 1941.

² Siler J F. Typhoid Vaccine Studies. Investigation of Virulence and Antigenic Properties of Selected Strains of Typhoid Organisms. *Am J Pub Health* 26:219 (March) 1936. Siler J F and others. Protective Antibodies in Blood Serum of Individuals After Immunization with Typhoid Vaccine. *ibid* 27:142 (Feb.) 1937.

immunogenic potency In all determinations our vaccine strain 42-A-58 was included as the control organism in order to detect superiority of the imported cultures over our vaccine culture, should any differences among them exist

All cultures (those from the Middle East and strain 42-A-58) proved to be of equal virulence, they were



Rates per thousand annually, for typhoid fevers in the United States Army, 1860 1942 Dotted line shows rates for all diarrheal diseases 1916 1941

antigenically identical, and they were equal in immunogenic potency when either a domestic or an imported strain of *E. typhosa* was used as the test organism. It was concluded, on the basis of these experimental results, that our currently used vaccine organism is quite as effective an immunogenic agent against the *E. typhosa* prevalent in the Middle East as is the vaccine organism used there, and as are locally distributed strains of typhoid organisms in the Middle East

As for the paratyphoid A and B organisms used in our 1940 type of triple typhoid vaccine, these were selected on the same bases as was the culture of *E. typhosa*. The strain of *Salmonella* paratyphi (41-N-22) was obtained from Dr. A. Felix of London and is easily the most virulent para A organism that we have found. It is culturally and biochemically typical of *S. paratyphi*, antigenically complete and immunogenically superior to all other strains with which we have worked. The strain of *Salmonella schottmuelleri* (41-H-6) was first chosen from our culture collection because of its high virulence for mice and when it was shown to be an antigenically complete immunogenically active culturally and biochemically typical para B organism, it was adopted to represent the B fraction of our TAB vaccine. A fuller description of these strains has recently been published by the staff of the Typhoid Research Unit.⁴

STATISTICAL STUDIES

The proof thus far presented of immunogenic coverage afforded by our vaccine organism consists of experimental evidence only. Much more significant is the statistical evidence. The actual morbidity of typhoid and paratyphoid fevers among the armed forces of the United States is shown in the chart covering the period from 1860 to 1870 and from 1896 to 1942.⁵ The rate for 1942 is an estimate, since the actual

strength of troops was not available. Rates for paratyphoid were first included in the Surgeon General's Annual Report of 1912, and some paratyphoid fever occurred in most of the years following that period. In 1916, during the mobilization on the Mexican border, an epidemic of diarrheal disease, including both bacillary and amebic dysentery, occurred there together with an increase in typhoid and a more pronounced one in paratyphoid, most of which was due to *Salmonella* paratyphi. The actual number of cases for that year were typhoid 96 and paratyphoid 410, approximately 95 per cent of which was paratyphoid A.

In 1917, with an average strength for the year of 678,579, there were 297 cases of typhoid, 13 of para A and 7 of para B, a total of 317. In 1918 with an average strength of 2,518,000, there were 768 cases of typhoid, 73 of para A and 34 of para B, a total of 875. Conditions in 1918 in the battlefields of France were responsible for a considerable proportion of the cases in that year, which included a number of contact cases among those caring for the sick.

An interesting test of the efficiency of the vaccine before the addition of the A and B fractions occurred in Hawaii in 1917. A patient with typhoid in a labor camp on the watershed infected an emergency source of water used only in dry periods. This water supplied a section of the post of Schofield Barracks, the population of which was about 4,000 immunized persons, most of them soldiers, and about 800 nonimmunized, most of whom were laborers—Koreans and Japanese. Fifty-five cases occurred in the group of 4,000 and 56 in the 800 unvaccinated controls. Eleven of the 56 were considered to be contact cases. Four of the 55 patients in the immunized group died, whereas there were seven deaths among the 56 patients in the unvaccinated group. This would indicate a protection from morbidity of about 80 per cent. Another factor believed to be of importance in minimizing the incidence in the nonimmunized group is that these oriental

Comparison of Typhoid and Diarrheal Diseases

	Average Strength*	Admissions	Average Rate	Deaths
1861-1866				
Typhoid	532,195	79,462	29.60	29,336
Diarrheal diseases	367,742	1,589,126	657.49	37,806
1898				
Typhoid	147,795	20,920	141.59	2,102
Diarrheal diseases	140,395	56,102	400.24	202
1917-1919				
Typhoid and paratyphoid	1,501,265	1,742	0.42	235
Diarrheal diseases	1,501,265	92,512	22.41	208
1940		Admission Rates Only		
Typhoid and paratyphoid			0.02	
Diarrheal diseases			37.57	
1941				
Typhoid and paratyphoid			0.02	
Diarrheal diseases			49.89	

* Strengths on which reports were adequate

peoples seldom drink water straight, preferring tea—though their eating utensils were cleansed in unboiled water.

As a result of reports from abroad before our entry into the first world war and of the epidemic on the border in 1916, *S. paratyphi* and *S. schottmuelleri* were added to the vaccine. From 1917 through 1919, when considerable numbers of our troops were exposed in areas of relatively high endemicity, the rates continued considerably above those of the period just prior to

4 Longfellow, Don and Luippold G. F. Typhoid Vaccine Studies VII. Typhoid Paratyphoid Vaccine, *Am. J. Pub. Health* 33: 561 (May) 1943.
5 Annual Reports of the Surgeon General of the Army, United States Treasury Department Public Health Service, 1943.

the war—from 1912 to 1915 inclusive. It is interesting to note that during the period of 1917 to 1919 the rates for diarrheal disease were dropping and reached the lowest point in the history of the Army in 1919. In the United States, troops were quartered in cantonments during their preparation and no extensive maneuvers were held. They were also demobilized from these same cantonments. The use of field sanitary installations for the disposal of excreta was minimal.

Because of the feeling that the para B fraction of the vaccine caused an undue amount of reaction, and because of the very small number of cases of paratyphoid B which were occurring in the countries where troops were stationed this fraction was removed in 1928, and this was followed in 1934 by the removal of the para A fraction. The sharp rise in the typhoid rate in 1931 was due to 22 cases occurring in one organization which used unpasteurized and infected milk while on a maneuver. The number of cases of paratyphoid as well as typhoid were insignificant between 1919 and the present time with the exception of the 1931 group. The removal of para A and para B fractions does not appear to have influenced the rates for typhoid and paratyphoid fevers although the general level of the incidence of diarrheal diseases increased appreciably in 1930 from about 12 to 20 per thousand and did not recede in subsequent years.

With the mobilization of the emergency period, typhoid rates show no significant change in 1940, during which there was a considerable amount of activity of troops in the field utilizing improvised installations for the disposal of human wastes. But during this period there was a very distinct advance in the rates for diarrheal diseases, including bacillary and amebic dysentery, diarrhea with cause not specified, gastritis and enteritis and colitis and enteritis. The combined rates were 17.74 for 1938, 24.79 for 1939, 37.09 for 1940, 49.89 for 1941.

Increase in the diarrheal diseases is usually accompanied by increase in typhoid. This is especially true in armies operating under field conditions. The diarrheal diseases usually occur in the greater numbers, though typhoid has the highest fatality rate. The accompanying table compares typhoid and paratyphoid with diarrheal diseases for four war periods.

The result of vaccination in World War I as compared with previous wars is evident, though the diarrheal rates were only about half those of the prewar period exclusive of 1916. Rates for 1940 and 1941 only are calculable, those for 1942 being estimated because records of the strength of the Army are not available. Typhoid and paratyphoid fever rates in these years are insignificant, and this in the presence of rising rates for the diarrheal diseases. This picture can be interpreted only as definite evidence of the efficiency of the present vaccine.

SUMMARY AND CONCLUSIONS

Following the compulsory use of typhoid vaccine in the U. S. Army in 1911 morbidity rates for typhoid and paratyphoid fevers dropped from about 2.5 per thousand annually in 1910 to below 0.2 for 1913-1915 inclusive, the Army having few troop maneuvers during this period.

In 1916 in epidemic condition of typhoid and paratyphoid fevers and diarrheal disease in the Army operating in the field resulted in rates for typhoid and paratyphoid fevers approximating those of 1910 most of the increase being due to paratyphoid A. No para-

typhoid organisms were included in the vaccine of that period.

The rates for typhoid and paratyphoid remained well above the peacetime level of 1913-1915 during the three years of World War I yet were significantly below the peacetime level of the prewar period—about 3 to 4 as compared to 0.3 to 0.4.

During the peace period of 1919 to 1939 rates were in the range of 0.01 to 0.08 with the exception of the food borne outbreak of 22 cases in 1931.

Thus far, rates for typhoid and paratyphoid fevers for the mobilization years 1940-1942 are insignificant, and this in the face of a rise in the rates for diarrheal diseases to higher levels than the period preceding World War I.

With this evidence it appears reasonable to conclude that the World War II (1940 type) triple typhoid vaccine is considerably superior in effectiveness to the TAB product employed during World War I.

VISCOSE TUBING FOR TRANSFUSIONS

A REACTION REDUCING MATERIAL AND A SUBSTITUTE FOR RUBBER

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AND

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CHICAGO

With the introduction of sodium citrate as an anti-coagulant by Lewisohn¹ and the development of the modern technic of blood transfusion, this procedure became routine and easily performed. However, under the most careful conditions a small incidence of untoward reactions, principally chills and fever, has remained a disturbing factor. Untoward reactions of this kind may be divided into two groups: intrinsic reactions, arising from the infused blood, and extrinsic reactions, arising from causes other than the blood.

This paper deals with extrinsic reactions. It has been amply demonstrated that the febrile reaction is largely due to the inadvertent injection of foreign material into the blood stream.² Many theories have been advanced in an attempt to explain the febrile reaction that is occasionally associated with the whole blood infusion and, for that matter, with intravenous infusions in general. Able investigators working along this line have shown that the reactions arise principally from three sources: pyrogenic substances in distilled water,³ impure chemicals used for preparing solutions,⁴ and improperly or inadequately cleansed equipment.

Even with constant vigilance and unremitting care in the preparation of the material used in the drawing and the administration of citrated blood, the incidence of febrile reactions is still from 1 to 10 per cent or higher.

In an effort to reduce the number of reactions following the administration of citrated blood we first

From the Transfusion Department, Michael Reese Hospital and the Michael Reese Research Foundation.

¹ Lewisohn, Richard. Blood Transfusion by the Citrate Method. Surg. Gynec. & Obst. 21: 37, 1915.

² Wiener, A. S. Blood Groups and Blood Transfusion. ed. 2. Springfield, Ill. Charles C. Thomas, 1938. p. 102.

³ Seibert, F. B. Fever Producing Substances Found in Some Distilled Water. Am. J. Physiol. 67: 90 (Dec.), 1923.

⁴ Walter, Carl W. Preparation of Safe Intravenous Solution. Surg. Gynec. & Obst. 63: 643 (Nov.), 1936.

⁵ Lewisohn, Richard and Rosenthal, Nathan. Prevention of Chills Following Transfusion of Citrated Blood. J. A. M. A. 100: 466 (Feb. 18), 1933.

eliminated the character of solutions and the manner of cleansing glass and metal parts as factors in the febrile reaction. The solutions in use at the Michael Reese Hospital transfusion department are commercially prepared and proved pyrogen free on test and the glass and the metal parts are relatively easy to clean and inspect. However, a small incidence of reactions

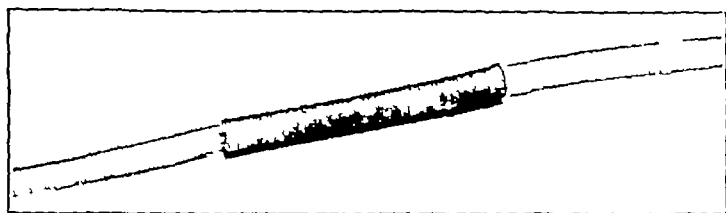


Fig 1—A 3 inch length of rubber tubing is slipped onto the Viscose tubing

remained, and our suspicion centered on the rubber tubing because of the difficulties involved in the cleansing of tubing. New rubber tubing is covered with sulfur and other impurities which must be removed to render it pyrogen free. Rubber tubing which has been used for a blood or a plasma transfusion must be so thoroughly cleansed that there is complete removal of all residual protein matter from the lumen. One can never be certain that this has been accomplished.

Our method of preparing new and used rubber tubing is described in another publication.⁶ This method of cleansing is drastic treatment to the rubber but was employed to reduce the possibility of febrile reactions. The effectiveness of this cleansing procedure was shown in a study by Zimmerman, Strauss and Lautman.⁷ Five consecutive series of five hundred transfusions each were analyzed and showed progressive reduction in the incidence of transfusion reactions as the technique of the cleansing of rubber tubing and other equipment for intravenous injections was improved. The total incidence of pyrogenic reactions in the final series was 2.2 per cent, compared with 5.2 per cent in an earlier series.

The drastic cleansing of rubber eventually destroys its original elasticity. The original elasticity is what

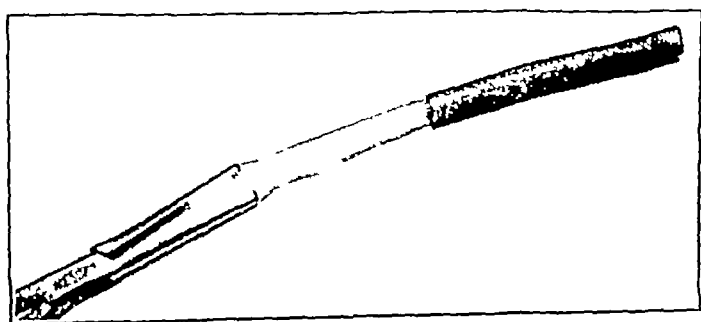


Fig 2—After moistening, the Viscose tubing is gently stretched with a hemostat

makes rubber desirable for use in intravenous administration work. Once the tubing begins to deteriorate, fissures develop on the inside and in this condition it can no longer be satisfactorily cleansed by any known procedure. It is hazardous to use old tubing for the administration of plasma serum or blood because the protein material cannot be completely removed. The

residual protein material will then be subjected to autoclaving in sterilizing the administration set, and the coagulated protein even in minute amounts can cause severe reactions when a subsequent transfusion washes it into the blood stream. Old tubing may be used with relative safety when it is restricted solely to the administration of dextrose and saline solution and when protein material does not come in contact with it.

With these inherent defects of rubber tubing in mind, we sought a substitute. The regular Viscose tubing described by Hartman⁸ was found by us to be fragile, difficult to handle and rather permeable to fluids. However, in our experience the heavy walled Viscose tubing has been free from these objections. The heavy walled tubing is far sturdier. The manufacturer impregnates the material with glycerin which acts as a hygroscopic agent. The moisture content determines the suppleness of the Viscose tubing. Refrigerator storage is desirable for partially used rolls. The tubing is supplied in lengths of 1500 feet on spools, wrapped in wax paper and at a cost so low that "one time use"

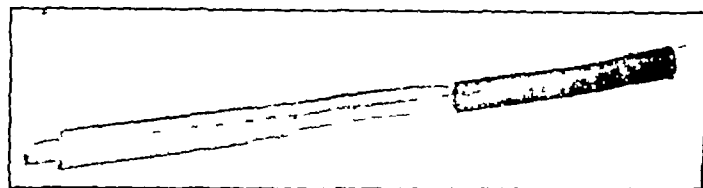


Fig 3—The expanded Viscose tubing is slipped onto the needle glass adapter $\frac{3}{4}$ inch



Fig 4—The rubber tubing is slipped onto the joint and the clamp placed in position

and discarding come to less than the cost of rubber considering the time, labor and material used in maintaining rubber tubing. The drying effect from autoclaving can be minimized by making a compact package of each length of tubing to be sterilized and placing it within a glass tube measuring 25 by 100 mm. The glass tube inhibits vaporization of the moisture in the Viscose tubing during sterilization. In contrast to its brittleness when dry, Viscose tubing is quite pliable when wet and permits the required manipulation.

It was important to know whether the Viscose tubing was pyrogen free, impermeable to pyrogens and impermeable to bacteria.

EXPERIMENTAL STUDIES

To determine whether the Viscose tubing was pyrogen free, 6 inch lengths were cut of every hundred feet from two rolls of Viscose tubing of 1,500 feet each. The specimens were cut into small pieces with sterile scissors and boiled in 200 cc of pyrogen free distilled water for fifteen minutes. The water was filtered through filter paper, made isotonic with sodium chloride and subjected to a pyrogen test.⁹ The pyrogen test was negative.

To ascertain whether pyrogens could diffuse through the wall of the Viscose tubing, the following tests were performed. A

6 Milzer, Albert. Laboratory Aspects of the Preparation and Biologic Control of Plasma, New York State J. Med. to be published.
7 Zimmerman, L. M., Strauss, Anne Marie, and Laufman, Harold. Blood Transfusion Reactions: Their Causes and Prevention. Ann Surg 114: 961 (Dec) 1941.

8 Hartman, F. W. Elimination of Rubber Tubing for Administration of Intravenous Solutions. Ann Surg 111: 498, 1940.
9 United States Pharmacopoeia, revision 12, pp 606-607.

crystalline pyrogen¹⁰ was used. The intravenous injection of 0.08 cc (0.016 mg) of this pyrogen into a dog weighing 13 Kg caused a rise in rectal temperature of 1.9 degrees F in two hours. To determine the effect of this pyrogen on rabbits, approximately 30 cc of a 1:400 dilution of the pyrogen was injected into each of 5 rabbits. All the rabbits showed a positive response, the average rise in temperature was 2.3 degrees F. Then 10 cc (0.2 mg) of the concentrated pyrogen was placed in a length of Viscose tubing, and the tubing was suspended in 400 cc of sterile non-pyrogenic isotonic solution of sodium chloride. Another flask containing 400 cc of the same lot of saline solution served as a control. At the end of two hours at room temperature the Viscose tubing containing the pyrogen was removed, and the saline solution in each flask was subjected to a pyrogen test.⁹ The saline solution in both flasks proved pyrogen free.

To determine whether bacteria could diffuse through Viscose tubing, the following test was performed. A diphtheroid isolated from contaminated human serum was inoculated in 15 cc. of Brewer's medium, the medium was then placed in a length of Viscose tubing and the tubing suspended in 400 cc of sterile Brewer's medium. At the end of three weeks' incubation at 37.5 C the medium surrounding the tubing was clear and sterile, whereas the medium in the Viscose tubing was turbid, indicating that bacterial growth was present in the tubing and that it had not penetrated through the tubing wall.

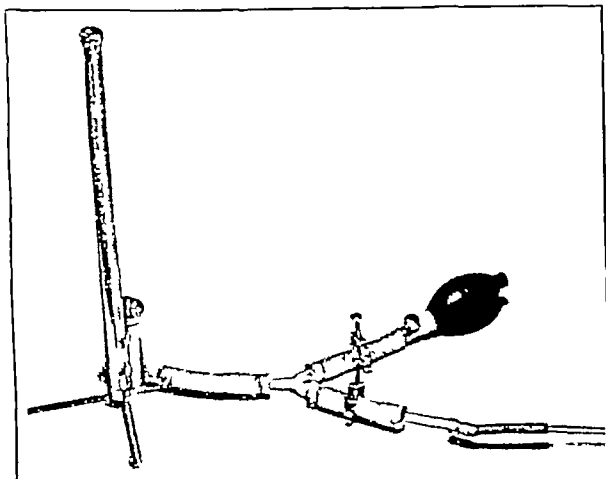


Fig 5—An airtight testing system uncovers leaky sections of tubing. After testing suction is applied to return the tubing to its original flat shape.

TECHNIC OF ASSEMBLY

The following technic has been developed for the use of Viscose tubing in assembling administration equipment.

1. Cut suitable lengths of tubing. Avoid sharp bends if the material is brittle.

2. Slip a 3 inch piece of rubber tubing over one end of the Viscose tubing, moving it down the Viscose tubing so that the terminal end of the Viscose tubing is exposed 2 inches (fig 1).

3. Dip the exposed end of the Viscose tubing into pyrogen free distilled water for twenty to thirty seconds to permit wetting.

4. Insert a small hemostat into the lumen and enlarge the lumen by gentle spreading of the blades of the hemostat (fig 2).

5. Moisten the end of a glass observation needle adapter in the distilled water, shake off excess water and slip $\frac{1}{4}$ inch of the expanded tubing over the glass fitting (fig 3).

6. Allow the tubing to dry. This takes about ten minutes. The tubing will shrink and grip the glass. No adhesives are necessary.

¹⁰ BM 27 no 2 supplied through the courtesy of Dr Heinrich Necheles, director of the department of gastrointestinal research of the Michael Reese Hospital.

7. Slide the rubber tubing down over the glass part. Moistening the Viscose tubing and glass will facilitate this procedure. The rubber tubing acts as a guard at the junction of the Viscose tubing and the glass part, it also serves as a site for the metal clamp used for regulating the flow (fig 4).

8. Each section of tubing must be examined for pinhole leaks. This is done by clamping off the free end of the Viscose tubing and inflating the tubing with a pressure bulb on a

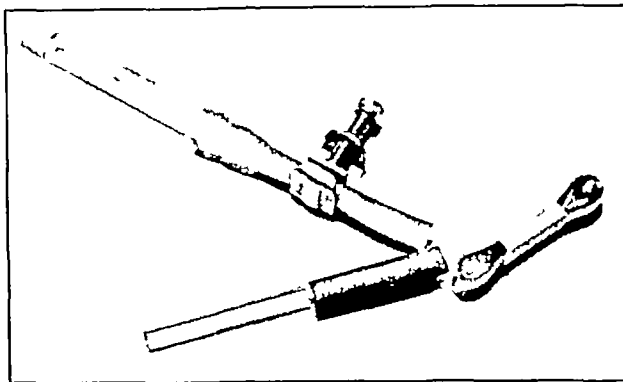


Fig 6—The Viscose tubing is folded on itself into a small package which can be slipped into a test tube. The other end of the tubing is ready for attachment to the second glass adapter.

manometer until the gage shows a pressure of 250 mm of mercury. Close off the source of pressure and observe the gage. The reading should remain stationary. A rapid fall means that there is a leak in that section of tubing and that it should be discarded. A multiple testing manometer can be constructed simply (fig 5).

9. With a suction bulb, completely evacuate the tubing until it is flat.

10. Fold the Viscose tubing on itself until it is a compact package about 2 inches long with the terminal end exposed about 3 inches. Wrap a band of paper around the tubing and fix it with a piece of Scotch tape. This will prevent the Viscose tubing from buckling in the autoclave (fig 6).

11. Slip a $1\frac{1}{2}$ inch piece of rubber tubing over the remaining free end of the Viscose tubing until $1\frac{1}{2}$ inches of Viscose tubing is exposed. Dip the end in the distilled water, expand and slip onto the glass filter chamber. Allow the Viscose tubing to dry, and slip the rubber guard onto the glass.

12. Complete assembly by connecting the filter to a glass Y tube (7 mm), using a 2 inch piece of rubber tubing ($\frac{1}{8}$ by $\frac{3}{16}$). Slip a 3 inch piece of rubber tubing ($\frac{1}{10}$ by $\frac{3}{16}$) onto each

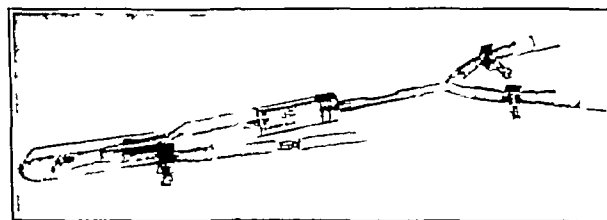


Fig 7—The assembly is completed and ready for wrapping and sterilization. Immediately before use the Viscose tubing will be soaked in water in the test tube to restore its suppleness.

end of the Y tube. Insert a glass bottle adapter in the free end of the rubber tubing and cover each adapter with unbleached muslin. Adjust shut off clamps. Slip a glass tube 25 by 100 mm over the Viscose tubing. This glass tube will prevent excessive drying of the Viscose tubing in the autoclave (fig 7).

13. Wrap in two layers of gauze and then in flannel back canvas and sterilize at 15 pounds pressure for twenty minutes.

14. When the assembly is ready for use proceed as follows:

(a) Unwrap the sterile covering, remove the glass tube and remove the binding around the Viscose tubing. Aseptic technique is not necessary in handling the tubing.

(b) Fill the test tube three-fourths full with water (cold tap water may be used) and completely immerse the Viscose tubing in the water for one minute. The tubing will become soft and pliable.

(c) Close the shut-off clamp near the bottle adapter. Insert the adapter into the bottle and suspend the bottle on a rack at the proper height.

(d) The Viscose tubing should now be extended to its entire length. Avoid twisting the tubing.

(e) Open the shut-off clamp and allow the tubing to fill. Air bubbles can easily be seen and removed. Close the shut-off clamp near the needle adapter, insert the needle into the vein, then open the shut-off clamp to allow fluids to run. The flow of fluids must be regulated by the clamp near the needle adapter. This will prevent the tubing from collapsing.

- 15 After one time use the Viscose tubing is discarded.
- 16 The foregoing technic is used in combination with rubber tubing. The rubber tubing is used for a few inches of connection, and the Viscose tubing for sections requiring the bulk of tubing. Only new rubber tubing is used and it is discarded after one time use.

CLINICAL STUDIES

In order to determine the value of "one time use" Viscose tubing in reducing reactions in blood transfusions, we studied 600 transfusions, alternating rubber

TABLE 1—Incidence of Pyrogenic Reactions with Rubber Tubing and with Viscose Tubing

	Transfusions	Pyrogenic Reactions		Allergic	Total
		Major	Minor		
Rubber tubing	300	2 (0.67%)	5 (1.7%)	1 (0.33%)	8 (2.7%)
Viscose tubing	300	0 (0.00%)	0 (0.0%)	2 (0.67%)	2 (0.67%)

TABLE 2—Analysis of Reactions with Viscose Tubing

Transfusions Made with Viscose Tubing	Pyrogenic Reactions		Allergic	Total
	Major	Minor		
1,137	1 (0.09%)	4 (0.3%)	3 (0.25%)	8 (0.64%)

tubing and Viscose tubing. The results are recorded in table 1. This table shows a striking reduction in the number of pyrogenic reactions with Viscose tubing.

We classify as major a pyrogenic reaction in which there is a chill and a rise in temperature of 2 degrees or more above the pretransfusion level. If the elevation of temperature is less than 2 degrees and there is no chill or a mild one, the reaction is considered minor.

All infusions of whole blood, plasma and serum at this institution are now administered through Viscose tubing. The total reaction rate for all transfusions administered with Viscose tubing is recorded in table 2. The table shows a total of five pyrogenic reactions. The one major reaction occurred in a woman (group O) who received 500 cc of citrated fresh blood. There was no untoward reaction at the time of the transfusion, and her temperature remained normal throughout the day. The following day, twenty-four hours after the transfusion, the patient complained of a chilly sensation and her temperature rose to 103.8 F. Forty-eight hours after the transfusion her temperature fell to 98.6 F.

The four minor pyrogenic reactions all occurred in a single patient, a 12 year old Negro girl (group A,

Rh positive) suffering from sickle cell anemia. She had previously been in the hospital in July 1942 and at that time received six transfusions through rubber tubing. After three of these transfusions she experienced an immediate chill and a rise in temperature ranging from 1 to 2 degrees F. She was readmitted to the hospital in April 1943 and subsequently received four transfusions through Viscose tubing. A rise in temperature of 1 degree F without chills occurred from three to six hours after each transfusion.

In 1941 Zimmerman and his associates⁷ noted that febrile patients and patients suffering from leukemia showed a significantly higher incidence of untoward reactions than afebrile and surgical patients receiving citrated blood. He pointed out that patients suffering from septic diseases are particularly sensitive to minute and otherwise innocuous amounts of pyrogenic material.

An opportunity to use rubber tubing and Viscose tubing alternately in the same patient presented itself in 3 instances (2 of leukemia and 1 of ulcerative colitis).

CASE 1—A girl aged 14 years (group A, Rh positive), suffering from ulcerative colitis, received fourteen transfusions of citrated blood of 250 cc each over a period of four months. All the blood was homologous and was never over 72 hours old. Seven transfusions were administered through rubber tubing and seven through Viscose tubing. Three reactions developed following transfusions through rubber tubing. One was a pyrogenic type with a chill and a rise in temperature from 99.0 to 100.0 F without chills. Following the transfusions with Viscose tubing there were no febrile reactions but there was one allergic reaction.

CASE 2—A J, a woman aged 43 (group O), suffering from monocytic leukemia, received fifteen transfusions of citrated blood of 500 cc each over a period of eight weeks. All bloods given were less than seventy-two hours old. Eight transfusions were administered through rubber tubing and seven through Viscose tubing. Following the transfusions with rubber tubing two major pyrogenic reactions developed. The seven transfusions administered with Viscose tubing were uneventful.

CASE 3—C M, a man aged 63 (group O), suffering from chronic myelogenous leukemia, received fifteen transfusions at another hospital and had a history of several pyrogenic reactions. Three subsequent transfusions administered through Viscose tubing were uneventful.

SUMMARY

The cleansing of rubber tubing to be used for intravenous administration of blood or blood protein is difficult. Incomplete cleansing of rubber tubing is believed to be a major cause of pyrogenic reactions.

Heavy walled Viscose tubing is sturdy, pyrogen free, impermeable to pyrogens, impermeable to bacteria and quite practical for one time use.

In a total of 1,137 blood transfusions given through Viscose tubing the incidence of pyrogenic reactions was 0.64 per cent. This is a material decrease from the reaction rate encountered with rubber tubing.

Cardiovascular Signs of Emotion—The heart and the gastrointestinal tract are the most sensitive recorders of a disturbed emotional state. The intimate connections between the autonomic nervous system and the heart are so close as almost to justify the statement that cardiac rhythm and rate are a measure of the activity of the state of tension in the sympathetic and the parasympathetic systems.—Kraines, Samuel H. The Therapy of the Neuroses and Psychoses, Philadelphia, Lea & Febiger, 1943.

SULFAMERAZINE

A CLINICAL STUDY OF ITS PHARMACODYNAMICS,
THERAPEUTIC VALUE AND TOXICITYPAUL O HAGEMAN, M D
CARL G HARFORD, M D
SIDNEY S SOBIN, M D
AND
ROY E AHRENS, M D
ST LOUIS

As a result of the rather frequent occurrence of crystalluria and hematuria following the use of sulfathiazole and sulfadiazine, an effort has been made to find a sulfonamide derivative of comparable therapeutic potency with less tendency to produce crystals in the urinary tract. This problem is of special importance to our armed forces stationed in warm climates where it is exceedingly difficult to maintain a satisfactory urinary output.

Sulfamerazine (2-sulfanilamido-4-methylpyrimidine) has been investigated because of its greater solubility as compared to other pyrimidine derivatives.¹ Welch and his co-workers² found that sulfamerazine and its acetyl derivative were approximately 20 per cent more soluble than the respective forms of sulfadiazine in both water and urine. Additional studies by Welch and his co-workers,³ Goodwin and his co-workers,⁴ and Murphy and his co-workers⁵ indicated that sulfamerazine was more rapidly and completely absorbed from the gastrointestinal tract and also that the drug was more slowly excreted. These observations suggested that

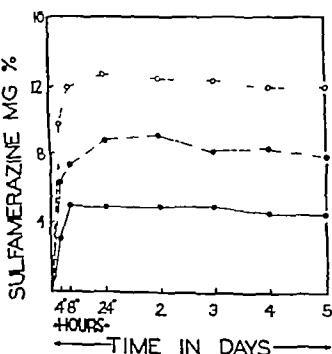


Chart 1—Absorption curve following 4 Gm of sulfamerazine given orally with maintenance dose of 1 Gm every eight hours. Blood levels are expressed as mg % of free sulfamerazine. Curve at top maximum at bottom minimum in center, average.

satisfactory blood levels might be attained with smaller doses of sulfamerazine and that the interval between doses might be lengthened. During the past four months 103 patients have been treated with sulfamerazine⁶ at the Barnes Hospital and the St. Louis City Isolation Hospital. The therapeutic results and toxic reactions observed constitute the subject of this paper.

From the Department of Medicine Washington University School of Medicine

This study was carried out at the suggestion of the Chemotherapy Committee of the National Research Council

The essential part of the work was done by the staffs of Barnes Hospital and the St. Louis City Isolation Hospital

1. Robin R O, Williams J H, Winney P S and English J P. *Chemotherapy*. II. Some Sulfanilamido Heterocycles. *J Am Chem Soc* 62:2002, 1940

2. Caldwell W T, Kornfeld E C and Donnell C K. *Substituted 2 Sulfanilamidopyrimidines*. *ibid* 63:2188, 1941

3. M. Kissinger, L W and Lincoln R M. *Sulfonamido Derivatives of Pyrimidines*. *ibid* 63:3028, 1941

4. Goodwin R A, Peterson O I and Finland Maxwell. *Absorption and Excretion of Sulfamethyldiazine in Human Subjects*. *Proc. Soc. Exper. Biol. & Med.* 51:262, 1942

5. Murphy F D, Clark J K and Flippin H F. *Studies on 2 Sulfanilamido-4 Methyl Pyrimidine (Sulfamerazine Sulfamethyldiazine) in Man. I. Absorption Distribution and Excretion*. *Am J M Sc* 205:17, 1943

6. Dr. William A. Feiler of Sharpe & Dolme Inc. supplied the sulfamerazine used in this study.

PROCEDURE

All patients were accepted for treatment provided other sulfonamides had not been previously administered during the current illness. In general, the drug was administered as follows:

An initial dose of 4 Gm was given (orally when feasible) and maintenance doses of 1 Gm every eight hours were given thereafter. For severely ill patients this dosage scheme was modified and initial doses up to 8 Gm and maintenance doses of 2 Gm every eight hours were often given. In addition, if blood concentrations did not attain desired levels supplementary doses were occasionally administered. Alkalis were not given to any patient. It was planned to force fluids to 3,000 cc in twenty-four hours in all cases in an effort to obtain a urinary output of 1,000 cc or more in twenty-four hours. Because of the shortage of hospital personnel, it was not possible to control the fluid intake adequately in every case particularly during epidemic periods, and in certain instances the fluid intake fell below the desired level. Blood concentrations were measured at least every twenty-four hours at a time just preceding the eight hour maintenance dose. Determinations of the sulfamerazine concentration were done by the method of Bratton and Marshall.⁶ All figures quoted are values for free sulfamerazine in whole blood. Urinalyses were performed daily during treatment, the microscopic examination being done as soon as possible after the patient voided. In some instances specimens remained at room temperature for one or two hours before being examined. Red blood cell counts, hemoglobin determinations and white blood cell counts were made at least every three days during treatment.

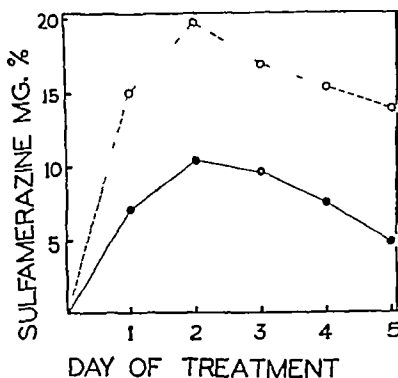


Chart 2—Average of blood and spinal fluid free sulfamerazine levels in 19 cases of meningococcal meningitis. Curve at top blood at bottom cerebrospinal fluid

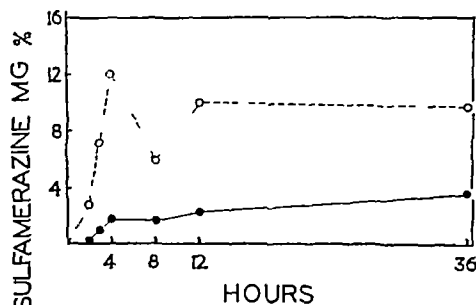


Chart 3—Diffusion of free sulfamerazine into uninfected spinal fluid following oral administration of 4 Gm of sulfamerazine. Curve at top blood at bottom cerebrospinal fluid. The 4 and 36 hour figures are the average of two sets of observations. Other values represent individual instances from different patients.

Culture mediums employed were beet or horse infusion broth and agar with 1 per cent Bacto-peptone, 1 per cent dextrose and 5 mg of para-aminobenzoic acid per hundred cubic centimeters. Spinal fluid cultures were

6. Bratton A C and Marshall E K. A New Coupling Component for Sulfanilamide Determination. *J Biol Chem* 128:537, 1939

made on beef or horse infusion blood agar slants. Cultures for meningococci were grown in 10 per cent carbon dioxide. In many instances additional samples of spinal fluid were inoculated on the chorioallantoic membrane of the chick embryo.⁷

PHARMACODYNAMICS

Absorption of the drug was followed closely in the first twelve patients treated (chart 1). The resulting

tration of the drug to patients without meningitis who had lumbar punctures for various reasons. These are plotted in chart 3 and suggest that a considerable lag occurs in the diffusion of the drug into the uninfected spinal fluid. In several instances simultaneous blood and pleural fluid concentrations were observed to show approximately the same levels in the fluid and the blood (examples: blood 64, pleural fluid 64, blood 67, pleural fluid 68; blood 63, pleural fluid 79).

TABLE 1—Meningococcic Infections Treated with Sulfamerazine

Case No	Age, Sex	Day of Dis- ease *	Severity of Infection	Cultures		Dura- tion of Treat- ment Days	Total Amount Drug Gm	Drug Concentration †						Therapeutic Re- sult
				Blood	Spinal Fluid			Blood			Cerebrospinal Fluid			
								24 Hr	Maxi- mum	Aver- age	24 Hr	Maxi- mum	Aver- age	
2 I	6 ♂	3	102 F, petechiae, CSF 7,000 cells	+	+	12	55	21.5	21.5	11.2	10.5	10.5	5.7	Cultures negative after first day temperature normal 8th day uneventful recovery
5 I	14 ♀	2	101 F, petechiae, rheumatic heart disease, CSF 12,000 cells	+	+	10	67	18.5	23	18.4	9	12	9.4	Cultures negative after first day temperature normal 8th day uneventful recovery
6 I	24 ♀	3	102 F, petechiae, 8 mos pregnant CSF 3 000 cells	—	—	7	42	15	20.0	16.6	6	14	10.6	Temperature normal in 12 hours uneventful recovery
9 I	7 ♀	2	101 2 F petechiae CSF 25 cells	+	—	6	20	18	18	10.7				Temperature normal on 4th day blood culture positive on 4th day uneventful recovery
12 I	17 ♀	3	103 F petechiae, comatose, CSF 19 000 cells	—	+	10	38	18.8	18.8	13.2	8.4	8.4	6.5	Culture negative after first day temperature normal on 8th day uneventful recovery
13 I	24 ♂	3	103 8 F, epileptic, CSF 20 000 cells	—	+	9	34	17.2	17.2	7.5	8.6	8.6	5.1	Culture positive on 2d day of treatment temperature normal on 5th day uneventful recovery
15 I	2 ♂	2	100 6 F, severe, CSF 22,000 cells	+	+	11	46.5	6.0	0	14.2	4.3	10.5	8.1	CSF positive on 3d day of treat- ment, temperature normal on 12th day uneventful recovery
16 I	16 ♂	3	102 F, petechiae, stuporous CSF 38 000 cells	—	++	12	61.5	10.0	12	9	4.6	7	4.8	Temperature normal on 12th day uneventful recovery
20 I	12 ♀	2	100 4 F petechiae, stuporous CSF 12 500 cells	—	+	3	20	17.8	18.8	16.7	10	10	8.5	Hematuria temperature normal on 8th day uneventful recovery
21 I	38 ♂	7	103 F, coma, iritis CSF 3 100 cells	—	+	8	57	21	21	16.6	13	13	12.2	Temperature normal 4th day iritis subsided uneventful recovery
22 I	18 ♂	2	104 F, petechiae, maniacal CSF 3,300 cells	+	0	14	89	13.7	27	19.5	7.5	15.8	12.9	Temperature normal 15th day uneventful recovery
23 I	20 ♀	4	103 F petechiae, CSF 160 cells	+	+	9	60	10	20	18.8	8.3	15.2	11.5	CSF positive on 2d day, temper- ature normal 7th day unevent- ful recovery
24 I	74 ♂	1	101 4 F, irrational, ecchymoses CSF 6 150 cells	+	++	5	41	37.0	17.0	24.2	20	20	17	Onset 2 days after transurethral resection uneventful recovery
25 I	32 ♂	9	101 F, petechiae, mentally dulled hemiplegic, CSF 9,500 cells	+	++	10	170	12.5	20	10.5	8	17.5	8.2	Temperature septic throughout CSF positive on 2d and 5th days developed pneumonia and died on sulfapyridine autopsy performed
26 I	20 ♀	2	103 2 F, drowsy, CSF 12 000 cells	+	+	8	50	21	21	16.7	8.0	8.5	8.1	Temperature normal 6th day uneventful recovery
27 I	65 ♂	7	103 F stuporous, hypertension CSF 19 200 cells	0	+	4	22	13.6	10.4	13.7	0.4	7.5	9.6	CSF xanthochromic died on 4th day no autopsy obtained
28 I	14 ♂	2	103 4 F, petechiae irrational, CSF 3,760 cells	+	+	9	44	19.4	22	16.8	4	6.5	5.7	Temperature normal 13th day— drug fever with rash, unevent- ful recovery
29 I	17 ♀	1	102 4 F, CSF 17 500 cells	—	++	5	35	17	18.8	17.4	7.5	10.4	8.6	Temperature normal 7th day hematuria, uneventful recovery
30 I	25 ♀	4	100 F, petechiae CSF 13,000 cells	—	—	7	41	12	21	14.0	7	7	5.8	Swollen wrist on 5th day sub- sided, uneventful recovery

curves are similar to those obtained by Welch⁸ and by Goodwin.⁹ Both rapid absorption and maintenance of high blood concentrations with the drug administered every eight hours, are well demonstrated. During the course of the study the diffusion of sulfamerazine into the spinal fluid was observed (chart 2) care being taken to use 1 per cent metycaine⁸ as a local anesthetic. In 19 cases of meningitis the spinal fluid concentrations averaged 49 per cent of the blood concentrations during the period of treatment. A few observations have been made on the relative concentrations of blood and spinal fluid shortly after adminis-

THERAPEUTIC RESULTS

(a) *Meningococcic Infections*.—Thirty-seven patients with meningococcic meningitis were treated as outlined in table 1.⁹ The therapeutic results were, on the whole, satisfactory. Most of the patients improved rapidly under treatment and all but 5 recovered. There were 3 pregnant women (6 I, 31 I, 42 I) who recovered without apparent harm to the fetus. A single case

9 Blood and spinal fluid levels are charted as follows: (1) the value attained twenty-four hours after the onset of treatment; (2) the maximum level reached; and (3) the average level observed during the period of therapy. Case numbers are accompanied by the letters I and R indicating the hospital in which the patient was treated: I, St. Louis City Isolation Hospital; R, Barnes Hospital.

7 Through the courtesy of Dr. Russell Blattner. To be published. 8 Gamma (2-methylpiperidino) propyl Benzoate Hydrochloride, Lilly.

(55 B) was complicated by diabetic acidosis and the patient survived. In one instance (21 I) a complicating iritis subsided without a residual lesion. A man aged 74 (24 I) developed the disease on the second postoperative day following a transurethral prostatic resection, and under sulfamerazine therapy his recovery was uneventful.

On a number of occasions a low grade fever persisted for several days after the patient seemed to have

(b) *Pneumococcic Infections*—Seventeen patients with pneumococcic infection were treated as outlined in table 2. The results were uniformly good in the pneumococcal infections but there were only 2 patients with bacteremia. Patient 17 I with meningitis and bacteremia died thirteen hours after being admitted to the hospital.

(c) *Streptococcic Infections*—Fifteen patients with streptococcic infection were included in the present

TABLE 1—*Meningococcic Infections Treated with Sulfamerazine—Continued*

Case No	Age Sex	Day of Disease *	Severity of Infection	Cultures		Duration of Treatment Days	Total Amount Drug Gm	Drug Concentration †						Therapeutic Result
				Blood	Spinal Fluid			Blood			Cerebrospinal Fluid			
								24 Hr	Max. num	Average	24 Hr	Max. num	Average	
31 I	19 ♀	1	100 F lethargic pregnant CSF 1,300 cells	+	+	6	36	21.0	21.6	10.3				Temperature normal 4th day hematuria uneventful recovery
32 I	67 ♀	2	104.6 F stupor hypertension CSF 50 000 cells	+	+	2	12	9						NPN 65 at admission with 4+ albumin and red blood cells in urine died in 32 hours no autopsy
33 I	15 ♂	1	99.8 F CSF 5 300 cells	—	—†	6	32	15.4	22.5	19.8				Temperature normal 2d day uneventful recovery
34 I	21 ♀	1	102.8 F lethargic petechiae CSF 380 cells fluid turbid from bacteria	+	+	3	18	14	21	17.2				Changed to sulfanilamide on 4th day because of rash CSF positive on 3d and 7th days eventually recovered
35 I	24 ♂	1	100 F lethargic petechiae arthritis CSF 5 400 cells	—	+	18	142	7.8	24	8.6	10.5			CSF positive on 6th day joints subsided slowly recovered
36 I	60 ♂	?	102 F coma petechiae CSF 7 600 cells	—	+	1	19	16.2						Died after 22 hours no autopsy
37 I	14 ♂	1	101.2 F stuporous petechiae CSF 18 450 cells	—	+	7	43.5	11.4	10.3	11.0				Temperature normal 5th day uneventful recovery
39 I	34 ♂	9	100 F delirious petechiae CSF 35,200 cells	—	+	8	59	9.5	15.8	9.9				Received 50 000 units of meningococcus antitoxin temperature normal 5th day uneventful recovery
40 I	54 ♂	?	100.4 F CSF 4,320 cells	—	—†	7	41	9	17.5	12.1				Temperature normal 9d day uneventful recovery
41 I	15 ♀	9	100.2 F stuporous CSF 1 600 cells	—	+	6	41	12	17.2	13.3	7.8			Temperature normal 4th day uneventful recovery
42 I	12 ♀	?	98.6 F petechiae pregnant CSF 17 250 cells	—	+	8	46	11.5	30	10.2				Received 50 000 units of meningococcus antitoxin hematuria uneventful recovery
43 I	16 ♀	9	102.6 F stuporous CSF 11 900 cells	—	—†	10	54	12	15	11.5				Temperature normal 7th day hematuria uneventful recovery
46 I	21 ♀	9	100 F lethargic petechiae CSF 27 500 cells	—	+	5	38	15	15	11.1				Temperature normal 11th day hematuria uneventful recovery
47 I	14 ♂	1	102.6 F petechiae CSF 11,600 cells	—	—†	7	38	16.4	23	19.7				Temperature normal 4th day hematuria uneventful recovery
48 I	15 ♂	9	101.4 F lethargic petechiae CSF 8 100 cells	+	+	10	64	21	21	17.0				† Drug fever uneventful recovery
49 I	23 ♀	4	103.8 F mentally dulled CSF 30 000 cells	—	+	9	50	23.5	23.5	19.2				Temperature normal 5th day uneventful recovery
41 B	69 ♀	9	103.4 F coma petechiae CSF 1 750 cells	—	+	4	10.5	10	20.2	15.0	10	10	0.3	NPN 60 at admission received 60 cc of meningococcus antiserum CSF became sterile died in uremia autopsy performed
55 B	52 ♂	?	104.4 F coma diabetic acidosis CSF 14 850 cells	+	+	6	37	10.4	14.5	10.5				Changed to sulfadiazine because of ? drug fever recovered slowly some possible neurologic residual

* Day of disease therapy was begun

† 24 hour level attained at end of 24 hours of treatment

‡ Culture positive on chorionallantoic membrane of chick embryo only

§ Culture contaminated

maximum highest level attained during treatment

average of all levels

‡ Smear positive for gram negative diplococci

§ Smear positive for gram negative diplococci

Smear negative

otherwise recovered completely (examples 15 I 16 I). Cultures of blood or spinal fluid remained positive for several days in a few instances (9 I 15 I 25 I 34 I 35 I). The only possible residual lesion was observed in patient 55 B who has an increased left ankle jerk and is still under observation.

Five patients in the group (25 I 27 I 32 I 36 I and 41 B) all of whom were elderly with complicating medical conditions such as hypertension, hemiplegia and kidney insufficiency failed to survive. The case fatality rate for the group of 37 patients was 13.5 per cent.

series (table 3). Although these were not severe infections (except 45 B) the response to treatment was satisfactory. In 1 instance (33 B) an abscess formed which contained sterile thin pus. Patient 45 B had severe uncontrolled diabetes with advanced gangrene of one foot. Blood cultures contained 8 to 12 organisms per cubic centimeter at the onset of treatment and subsequent cultures showed no growth. The patient died on the third day of treatment.

(d) *Urinary Tract Infections*—Four patients with urinary tract infections were treated as outlined in

table 4 Results were uniformly satisfactory, however, none of the patients had bacteremia

(c) *Miscellaneous Infections*—Thirty patients with miscellaneous diseases including gonococccic and staphylococccic infections also were treated and the results

Drug fever with morbilliform rash was observed twice (28 I 34 I) (19 per cent) The rash was similar to that seen with other sulfonamides

Neuropathologic changes agranulocytosis anemia, nausea and vomiting were not observed in this series

TABLE 2—*Pneumococcus Infections Treated with Sulfamerazine*

Case No	Age	Sex	Day of Dis- ease *	Number of In- fects	Type of Pneumo- coccus	Blood Culture	Severity of Disease	Duration of Treat- ment Days	Total Amount Drug Gm	Blood Concentration			Therapeutic Result
										24 Hr	Maxi- mum	Aver- age	
1 B	25	♂	3	I	I	—	Moderate	5	10	9.8	9.8	7.8	? Drug fever excellent
2 B	21	♀	?	I	I	—	Moderate	15	52	8.4	10.7	8.5	Excellent
6 B	51	♂	6	Broncho	IX	—	Chronic lymphatic leukemia	6	20	9.5	12.3	11.1	Good
7 B	63	♂	10	Broncho	??	—	Bronchial asthma	6	20	6.6	11.8	9.8	Good
8 B	49	♀	3	I	VI	—	Bronchial asthma	12	9	13.2	13.2	10.4	Excellent
9 B	56	♂	??	Broncho	??	—	Cardiac failure	13	44	6.5	6.5	5.3	Course not altered
10 B	50	♀	1	I	VI	—	Moderate	8	26	11	11	6.5	Excellent
16 B	20	♂	1	I	I	+	Severe	9	27	8.2	8.4	6.6	Hematuria, excellent
19 B	49	♂	?	Broncho	??	—	Pneumonia and chronic bronchitis	9	32	6.7	9.1	5.6	Good
20 B	57	♂	1	I	XXXIII	—	Moderate	7	24	7.6	7.9	5.6	Excellent
22 B	73	♂	?	Broncho	†	—	Bronchial asthma	5	10	13.3	13.3	10.4	Good
34 B	35	♀	4	I	I	+	Bronchial asthma	6	22	12.1	12.1	7.4	Excellent
37 B	53	♂	2	Broncho	IV	—	Hemiplegia	6	23	7.3	10.7	9.0	Excellent
58 B	56	♂	5	II	I, VII	—	Cardiac failure jaundice	10	40	17.5	22.3	13.3	? Drug fever, received 300 000 units of type I rabbit serum recovered slowly
53 B	69	♀	1	I	??	—	? Pulmonary infarct	11	31	14.6	16.1	13.1	? Drug fever good
14 I	12	♀	2	I	??	—	Meningismus	7	24	12	14.4	12.3	Excellent
17 I	54	♀	2	Meningitis	VII	+	Comatose	13	14		14.4	12.3	Died in 13 hours no autopsy

* Day of disease treatment was begun † Pneumococcus isolated but not typable

TABLE 3—*Beta-Hemolytic Streptococcus Infections Treated with Sulfamerazine*

Case No	Age	Sex	Diagnosis	Day of Dis- ease *	Severity	Local Cul- tures †	Blood Cul- tures †	Duration of Treat- ment, Days	Total Amount Drug, Gm	Blood Concentration			Therapeutic Result
										24 Hr	Maxi- mum	Aver- age	
3 B	22	♀	Pharyngitis	2	Moderate	+	—	6	22	8.4	9	8.1	Excellent
12 B	23	♀	Tonsillitis, peri tonsillar abscess	4	Severe	+	—	8	26	11.1	13.3	11.2	Excellent
15 B	34	♀	Pharyngitis	2	Severe	+	—	3	13	10.4	10.4	8.7	Excellent
30 B	24	♂	Pharyngitis	3	Severe	+	—	2	9	10.8	12.6	11.7	Excellent
42 B	20	♀	Pharyngitis	2	Severe	+	—	3	13	16.6	16.6	16.2	Excellent
11 B	41	♂	Erysipelas	1	Moderate	0	—	6	21	6.9	6.9	6.2	Good
33 B †	41	♂	Erysipelas abscess	4	Severe	—	—	14	28	6.6	9.4	5.7	Good sterile abscess
18 I	64	♂	Erysipelas	1	Moderate	0	0	7	22	8.5	14.2	9.8	Maniacal on 3d and 4th days lesion cleared rapidly
19 I	84	♂	Erysipelas	?	Mild	0	0	8	23	9	9	6.2	Excellent
38 I	74	♂	Erysipelas	3	Mild	0	0	8	25	15	15	12.9	Lesion cleared rapidly temperature normal 8th day
43 I	40	♀	Erysipelas	2	Mild	0	0	7	20	11.4	11.4	6.9	Excellent
44 I	70	♂	Erysipelas	2	Moderate	0	0	7	21	7.5	7.5	5.0	Excellent
50 I	30	♂	Erysipelas	2	Severe	0	0	6	19	12.5	14.4	12.5	Excellent
11 I	14	♂	Scarlet fever	2	Moderate	0	0	8	25	14	14.7	12.3	Excellent
46 B	73	♂	Septicemia	?	Severe, diabetic gangrene	0	+	3	13	12.6	14.9	13.5	Died, blood culture negative before death

* Day of disease treatment was begun † + = culture positive — = culture negative, 0 = culture not obtained
† Same as patient 11 B

obtained were comparable to those observed with sulfadiazine therapy

TOXICITY

Drug fever was noted in 6 instances (1 B, 27 B, 53 B, 55 B, 58 B, 48 I), an incidence of 58 per cent This reaction was not unlike that observed with other sulfonamides as to severity, time of appearance and response to withdrawal of drug

Although animal experiments² had not shown notable neuropathologic changes, neurologic symptoms and signs were carefully watched for because of the experience reported with sulfamethylthiazole, a similar methyl derivative

Crystalluria without hematuria was noted in 7 cases (4 B, 6 B 19 B 2 I, 4 I, 23 I, 37 I), an incidence of 68 per cent None of the patients complained of symp-

toms, and the crystals could be seen only microscopically. Eight other patients showed crystalluria in urine specimens that were exposed to room temperature for one to two hours, but these results were discarded when fresh urines were found to be free of crystals. In every instance in which fresh urines were not checked to confirm the presence of crystalluria, the case was included as one showing crystalluria. The mere fact that crystals often appeared at room temperature soon after voiding suggests that the urine approaches saturation with sulfamerazine and its acetyl derivatives. Attempts to relate the presence of crystals to the blood concentration failed to reveal a correlation.

One patient (25 I, table 1) had no crystals or red blood cells in daily urine samples but at autopsy was found to have concretions of sulfonamide crystals in

parable to that obtained with a larger fluid intake in a hot climate.

Hematuria was observed in 9 instances (87 per cent), (table 5). In 3 of the 9 cases the hematuria was grossly visible and in the others the red blood cells varied from "many" to "occasional" (47 I) per high power field in the centrifuged specimen. Crystalluria was observed at some time during treatment in 3 of the 9. Attempts to correlate the occurrence of hematuria with blood levels have shown no apparent relationship. Four of the 9 patients had petechiae in the skin.

Patient 29 I was menstruating at the time hematuria was reported. Catheterized specimens contained red blood cells, but the possibility of menstrual contamination is not excluded, since a two glass technic was

TABLE 4—*Bacillus Coli* Infections Treated with Sulfamerazine

Case No	Age	Sex	Diagnosis	Urine Culture	Urinary WBC/HP Field, Cent	Duration of Treatment, Days	Total Amount Drug Gm	Blood Concentrations			Therapeutic Result
								24 Hr	Maximum	Average	
38 B	62	♀	Pyelitis + brucellosis	+	10+	9	25	11.3	19.3	15	Excellent
43 B	61	♂	Cystitis carcinoma of prostate	+	Occasional clumps	7	21		4	8.6	Culture negative before death
49 B	34	♀	Cystitis, cystocele	+	Many	5	17	15.8	15.8	15.5	Good
59 B	69	♂	Cystitis coronary artery disease	+	200	4	13		8.6		Good

TABLE 5—Cases of Hematuria Observed During Sulfamerazine Treatment

Case No	Age	Sex	Petechiae	Day of Treatment*	Intake † Cc. per 24 Hr	Output † Cc. per 24 Hr	Blood Concentration			Non protein Nitrogen	Day of Crystalluria ‡	Severity	Duration in Days §	Result
							Hematuria	Maximum	Average †					
20 I	12	♀	+	3	1,730	Incontinent	13.5	18.8	16.7	32	0	Gross	3	Subsided promptly
29 I	17	♀	—	5	2,140	1,800	18.8	18.8	17.4	—	0	Micro	3	Subsided promptly (menstruating)
31 I	19	♀	—	6	1,875	715+	14	21.6	10.3	—	4	Gross	3	Subsided promptly
42 I	32	♀	+	6	2,600	720+	13.5	30	16.2	18	3	Micro	4	Pregnant albumin 8th day subsided
45 I	15	♀	—	8	2,300	1,470	11.5	15	11.8	—	5	Micro	1	Subsided promptly
46 I	21	♀	+	4	2,360	2,100	7	15	11.1	24	0	Gross	5	Subsided promptly
47 I	14	♂	+	6	1,910+	1,480	21.5	23	19.7	—	0	Micro	2	Subsided promptly
16 B	20	♂	—	7	3,170	2,170	3.8	8.4	6.0	—	0	Micro	4	Subsided promptly
36 B	32	♂	—	13	2,630	2,092	9.7	16.2	13.6	19	0	Micro	1	Subsided promptly

* Day of treatment hematuria first appeared

† Average of 3 days preceding onset of hematuria

‡ Blood concentration at time of hematuria maximum level before hematuria average level during therapy

§ Day of treatment crystals were first seen

|| Duration of hematuria

both ureters. Since the patient had received sulfapyridine following cessation of sulfamerazine treatment, the identity of the crystals was open to question. Samples were sent to Sharpe and Dohme¹⁰ and were identified as acetyl-sulfamerazine. The daily fluid intake averaged 1,800 + cc and the urinary output 850 + cc during the period of sulfamerazine treatment. Blood nonprotein nitrogen was not measured at any time, as urinary complications were not suspected. Urinary suppression was not noted terminally, but the output was not accurately known because of urinary incontinence. This patient received large doses of sulfamerazine averaging 8 Gm in twenty-four hours for fifteen days, and the blood concentration reached 29 mg per hundred cubic centimeters on one occasion. It is felt that the crystalline deposits were due to an inadequate intake of fluid, but the urinary output might be quite com-

not employed. It is of interest that patient 36 B had a bloody stool on the day hematuria was reported; no subsequent episodes of hemorrhage occurred.

None of the patients developed nitrogen retention, urinary suppression or other evidence of kidney impairment. Symptoms cleared promptly with every patient on cessation of therapy.

COMMENT AND SUMMARY

Experience accumulated in the treatment of 103 patients has demonstrated that sulfamerazine is rapidly absorbed from the gastrointestinal tract and is rather slowly excreted by the kidney. Adequate drug levels can be maintained by doses administered at eight hour intervals. The drug readily diffuses into pleural fluid in concentrations approximating that of the blood and into spinal fluid in concentrations approaching 50 per cent of that in the blood. Patients tolerate sulfamerazine well, side effects being few in number.

10 Through courtesy of Dr. Earl L. Burbidge Jr.

tion of staphylococci than in those in which treatment was begun before injection

It is significant that the cerebrospinal fluid cultures remained positive for several (or many) days even in those treated animals which recovered. This is in support of the now generally accepted concept of penicillin as a bacteriostatic agent

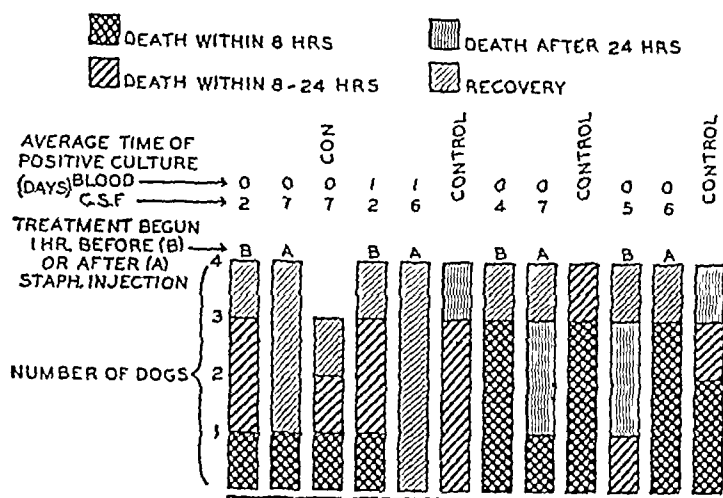


Chart 5—The effect of treatment of staphylococcal meningitis with daily intracisternal injections of 50 units of penicillin

At no time were any harmful effects attributable to penicillin observed

COMMENT

A survey of all our experiments (chart 6) suggests that frequent intravenous medication with penicillin may be of slight benefit in staphylococcal meningitis. Such benefit, if actually present at all, was very limited in this study. This is not surprising in view of the recent observation of Rammelkamp and Keefer⁹ that "penicillin does not pass through the blood-brain barrier in significant quantities following an intravenous injection of the substance."

On the other hand, our experiments indicate clearly that intrathecal administration of penicillin (even in widely spaced doses now known to be too small) may greatly reduce the mortality rate

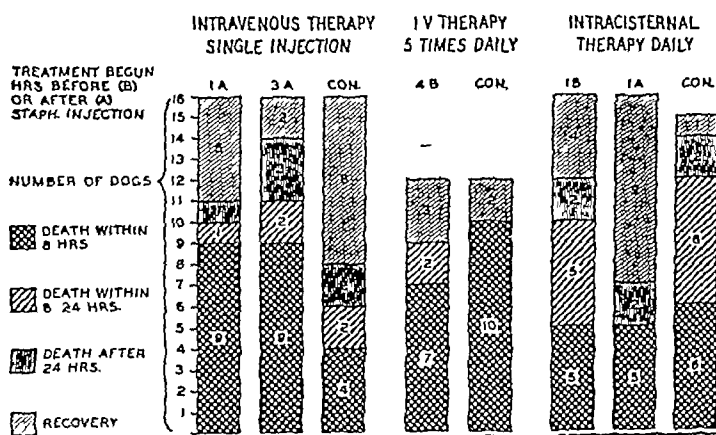


Chart 6—Composite chart of three groups

Since these experiments were completed, Rammelkamp and Keefer¹⁰ have reported studies on the effects of intrathecal injection of single large doses of penicillin in normal human beings as well as in several subjects with various diseases of the central nervous system. Their observations indicate that penicillin is absorbed

slowly from the cerebrospinal fluid (although more rapidly in the presence of meningitis than in normal subjects). They also demonstrated the same meningeal reaction which was observed in our experiments. The only toxic reactions observed by them were vomiting and headache in one subject (after intrathecal injection of 10,000 Florey units).

From our experiments it seems justifiable to conclude that intrathecal injection of penicillin is a safe form of therapy and to suggest that this method of treatment will probably be of great value in clinical cases of staphylococcal meningitis.

SUMMARY

Intravenous treatment of experimental staphylococcal meningitis was found to have little if any beneficial effect.

Penicillin, when injected intrathecally, even in relatively large doses, produced a pleocytosis in the cerebrospinal fluid but no other significant toxic effect.

Intrathecal treatment of experimental staphylococcal meningitis with relatively small doses of penicillin greatly reduced the mortality rate (from 93 per cent in control experiments to 54 per cent in treated animals).

It is suggested that intrathecal penicillin therapy will probably be valuable in treatment of clinical staphylococcal meningitis.

THE PROBLEM OF THE ETIOLOGY OF RAT BITE FEVER

REPORT OF TWO CASES DUE TO *SPIRILLUM MINUS*

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Evidence at present indicates that two different infectious agents may produce the disease known as rat bite fever. *Spirillum minus* and *Streptobacillus moniliformis*. The clinical manifestations of these two infections may be so similar that differentiation is possible only by demonstration of the causative organisms.¹ Recent reviews of the literature on rat bite fever in America show that approximately 150 cases have been reported and that the majority were regarded as *Spirillum minus* infections, although actual demonstration of the parasite by animal inoculation was carried out in only 23 of the cases.² Dawson and Hobby have questioned this evidence because the laboratory animals used in making the diagnosis may be naturally infected with spirilliform organisms and because *Spirillum minus* has not been demonstrated in the blood of persons suffering from rat bite fever.³ Nevertheless it must be accepted that *Spirillum minus* can produce a disease in man typical of rat bite fever, since a number of patients with neurosyphilis have been inoculated with *Spirillum minus* for therapeutic purposes and the typical clinical picture of rat bite fever has resulted.⁴ Brown

Dr. R. S. Leadingham gave technical assistance in identifying *Spirillum minus*.

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¹ Brown, T. M. and Nunemaker, J. C. Bull. Johns Hopkins Hosp. 70: 201 (March) 1942.

² Larson, C. L. Pub. Health Rep. 56: 1961 (Oct 3) 1941. Pack, Chanian, A. and Sweet, L. K. Med. Ann. District of Columbia 10: 95 (March) 1941. Roghiano, A. G. Surgery 11: 632 (April) 1942. Brown and Nunemaker.

³ Dawson, M. H. and Hobby, G. L. Tr. A. Am. Physicians 54: 329, 1939.

⁴ Solomon, H. C., Berk, Arthur, Theiler, Max, and Clay, C. L. The Use of Sodoku in the Treatment of General Paralysis, Arch. Int. Med. 35: 391 (Sept.) 1926. Hershfield, A. S., Kibler, O. A., Colby, Selma, Koenig, M. T., Schmid, O. W., and Saunders, Ann. M. Sodoku Treatment in Paresis, J. A. M. A. 92: 772 (March 9) 1929.

⁹ Rammelkamp, C. H., and Keefer, C. S. J. Clin. Investigation, to be published, cited by Rammelkamp and Keefer.

¹⁰ Rammelkamp, C. H., and Keefer, C. S. The Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection. Am. J. M. Sc. 205: 342 (March) 1943.

and Nunemaker, after studying the available evidence, expressed the opinion that infection with either of the two organisms may follow rat bite but thought that *Streptobacillus moniliformis* infection is probably the commoner of the two. The reasons for uncertainty are that only in a few cases has search for both organisms been made and that the laboratory procedures used have not always been reliable. In the present article I report two additional cases of rat bite fever. *Spirillum minus* was isolated in both instances and cultures for *Streptobacillus moniliformis* were negative. Certain technical details of the laboratory procedures are considered.

REPORT OF CASES

CASE 1—History—L. G. H., a white boy aged 2 years, was bitten by a rat on the thumb and first finger of the right hand while asleep on Dec. 12, 1942. He was brought immediately to the emergency clinic of Grady Hospital, where the wound, described as "multiple lacerations," was cleaned and dressed with 1 per cent sulfathiazole ointment. Antitetanus serum was administered. The wound healed promptly and the child remained well until Jan. 18, 1943, thirty-seven days later, when his mother noted that his skin was hot, that he was listless and that there were several small red spots on his face and arms. The next day he improved rapidly and the rash disappeared. Four days later he again became listless and feverish and was brought to the hospital. Examination showed a normally developed child who appeared acutely ill. The temperature was 104 F. His skin was hot and dry, and several large irregular, erythematous areas were present on his face, neck, abdomen and right arm. There were some swelling and induration at the site of the rat bite. The right axillary nodes were palpable. There were no other physical findings. The erythrocyte count was 3,150,000 per cubic millimeter, hemoglobin was 81 Gm. per hundred cubic centimeters and leukocytes numbered 6,500 per cubic millimeter with 72 per cent polymorphonuclears. The urine was normal. Agglutination tests with typhoid, proteus OX19 and brucella were negative. The blood Kahn reaction on admission was "doubtful," two days later it was 2 plus and three days later it was "doubtful." No further Kahn tests were done. The tuberculin test was negative.

Course—The patient's temperature variations and the significant laboratory studies are shown graphically in chart 1. It will be observed that he had three febrile episodes, separated by periods of two to three days of normal temperature. During each of the febrile periods a blotchy erythematous rash was noted on his face and extremities. Between the sixteenth and

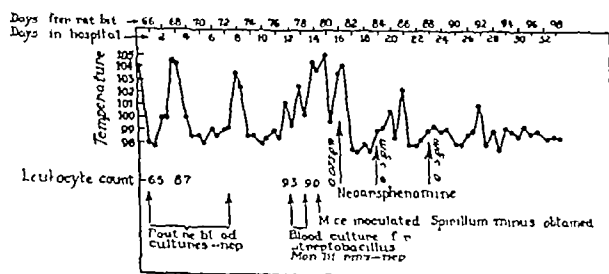


Chart 1—Course of temperature in case 1 together with significant laboratory and therapeutic procedures

twenty-third hospital days three intravenous injections of neocarsphenamine were given. Following these he had one brief rise of temperature but thereafter remained afebrile and was apparently quite well when discharged from the hospital on the thirty-third day. He was seen again at a follow-up visit two months later and was still free from symptoms.

Special Laboratory Examinations—Routine blood cultures in tryptose phosphate broth on the first and eighth hospital days gave no growth. On the thirteenth and fourteenth hospital

days blood cultures were made according to the technic recommended by Brown and Nunemaker for *Streptobacillus moniliformis* with 20 per cent fresh rabbit serum in tryptose phosphate broth. Again there was no growth. In an attempt to demonstrate the presence of *Spirillum minus* 4 mice were inoculated with the patient's blood. Each received 0.25 cc of fresh uncitrated blood intraperitoneally. The blood of each mouse was examined by dark field microscope before inocula-

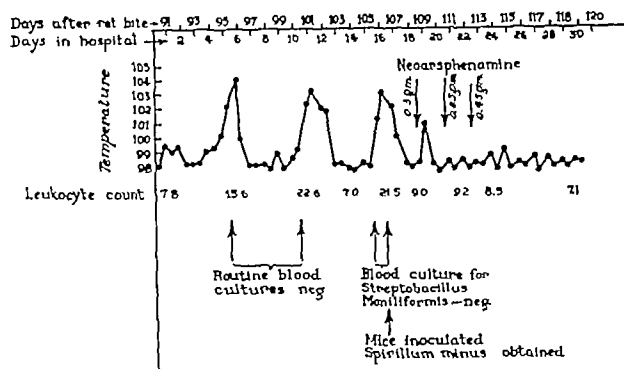


Chart 2—Course of temperature in case 2 together with significant laboratory and therapeutic procedures

tion and also on the seventh and fourteenth days afterward, but no spirilla were found. On the sixteenth day, however, *Spirillum minus* was observed in the blood of 1 of the 4 mice, and on the eighteenth day it was present in the blood of all 4 mice. During the succeeding four weeks *Spirillum minus* was easily demonstrated in the blood of all 4 mice.

CASE 2—M. L. H., a white woman aged 59, married, came to the emergency clinic of Grady Hospital on the night of Nov. 2, 1942 a few hours after she had been bitten by a rat while sleeping. There was a small puncture wound on the right side of her face near the angle of the jaw. This was treated with chromic acid, and she was given antitetanus serum. On November 19, seventeen days later, she returned to the clinic because of a soft swelling in the region of the bite. Her temperature was 99.6 F. The swelling seemed fluctuant and was incised, but no pus was obtained. She returned for a dressing on November 23, at which time the wound was almost healed. She was not seen again until Feb. 1, 1943, when she returned to the medical clinic complaining of pains in her extremities, weakness, loss of appetite, spells of nausea and vomiting, and some loss of weight. She did not remember dates very accurately, but questioning indicated that she had felt well until about December 25, which was fifty-three days after the rat bite. At that time she had a febrile illness which she thought was "influenza." This had been characterized by chilly sensations, fever, aching in the muscles and a "head cold" and had lasted for approximately two weeks. From that time until admission to the hospital she was never entirely well. There had been episodes every few days of feverishness, chilliness, nausea and vomiting. About January 10 she had noted a painful swelling of her hands, forearms and elbows and one week later there was a similar swelling of her feet and ankles, first on the left side and then on the right. She was admitted to the hospital for study. On physical examination she appeared poorly nourished but not acutely ill. There was no fever. The skin was somewhat dry and scaly. A few small nontender lymph nodes were noted in the right submaxillary and posterior cervical regions. The heart and lungs were normal. The blood pressure was not elevated. The abdomen was not tender; the liver edge was just palpable, the spleen was not felt. Over the right foot and leg was a soft pitting edema and this entire area was somewhat tender on pressure. Dorsiflexion of the right foot was painful. These findings were interpreted as evidence of thrombophlebitis in the right leg. Routine laboratory examina-

tions showed erythrocytes 3,600,000 per cubic millimeter, hemoglobin 9.5 Gm per hundred cubic centimeters, leukocyte count 7,800 with 87 per cent polymorphonuclears, sedimentation rate 82 mm per hour, blood Kahn test negative, urine normal

Course—The patient's temperature and significant laboratory studies during her hospital stay are shown graphically in chart 2. It will be noted that she had three febrile episodes at approximately five day intervals and that no further episodes occurred after she was given injections of neoarsphenamine. The leukocyte count rose sharply when she developed fever. A diagnosis of rat bite fever was not suspected until some days after admission, and initial studies were concerned with the function of her stomach and gallbladder. On the twelfth hospital day, when she had fever, the following note was made on her record: "There is a diffuse erythema over the outer surfaces of the arms, a slight splotchiness over the abdomen, and the skin of the right leg below the knee is diffusely reddened and warm. There is a fairly marked erythema surrounding the original area of the rat bite. There is no new lymphadenopathy, though there are small nontender nodes in the submaxillary region." At the onset of the third paroxysm of fever, special laboratory procedures for the identification of *Spirillum minus* and *Streptobacillus moniliformis* were carried out, and following that she was given three intravenous injections of neoarsphenamine at two day intervals, as indicated in the chart. This effected a pronounced and rapid clinical improvement, the nausea and vomiting ceased and the pain and swelling in her extremities disappeared. She left the hospital, feeling entirely well, on the thirty-first day. Four weeks later she returned to the outpatient clinic for follow-up and reported herself entirely well.

Special Laboratory Examinations—Routine blood cultures on the sixth and eleventh hospital days were negative. On the sixteenth and seventeenth days two more cultures were made according to the technic of Brown and Nunemaker, using 20 per cent fresh rabbit serum in tryptose phosphate broth, but *Streptobacillus moniliformis* was not obtained. In an attempt to find *Spirillum minus*, mice were inoculated with the patient's blood on the seventeenth day. Four mice each received 0.5 cc. of fresh uncitrated blood intraperitoneally. One of these mice was killed by its cage mate two days later. Examinations of the blood of the remaining 3 mice were made on the third, twelfth and fourteenth days after inoculation, and *Spirillum minus* was not found. On the seventeenth day *Spirillum minus* was found in the blood of 1 of the mice but not in the other 2. On the twenty-first and thirtieth days the same mouse was positive and there appeared to be a considerably larger number of spirilla present. The organisms were never found in the blood of the other 2 mice.

LABORATORY EXAMINATIONS IN RAT BITE FEVER

Streptobacillus moniliformis has been isolated by routine blood culture on a number of occasions, but Brown and Nunemaker advise a modification of the routine procedure when this organism is suspected.¹ Their technic consists essentially in centrifuging citrated blood and then culturing the blood cell residue in test tubes containing fresh serum and a nutrient broth. Under these conditions the "fluff ball" colonies are easily seen and can be withdrawn with a pipet for staining or subculture. Wayson's stain was recommended for studying the morphology of the organisms. This technic was carefully followed in the present cases. Any formation on the surface of the blood cell layer which was suspected of containing bacteria was stained by Wayson's and other methods, but the results were always negative.

Suitable precautions were taken to eliminate the possibility of preinfection in the mice used in the isolation of *Spirillum minus* from these 2 patients. Not only were there several negative preliminary examinations

on the test mice but as a further precaution 14 cage mates which had not been inoculated were also examined. *Spirillum minus* was not present in the blood of any of the animals. Furthermore, the animals used in the 2 cases were different breeds of mice. Those used in case 1 were brown mice which had been obtained from South Carolina, while those used in case 2 were white mice which had been obtained in Atlanta.

Spirillum minus is not difficult to identify when present in the peripheral blood of a mouse. A drop of blood, obtained by snipping off the end of the tail with scissors, is pressed out very thinly with a cover slip on a slide, and the preparation is examined in a dark field microscope. McDermott has written an extensive description of this organism.⁵ The most striking characteristic is its extremely rapid motility. In a fresh preparation it darts in and out of the field very rapidly, however, after an hour or more the motility is often considerably slower. Under these circumstances it is easier to observe the morphology. The organisms are 2 to 5 microns in length, and there are usually two to five spirals. Flagella can be seen as a hazy appearance at the ends. In addition to visibility in the dark field they can also be seen in stained preparations. Ripley and Van Sant have published excellent photomicrographs.⁶

Emphasis is needed on the point that the appearance of the spirillum in the peripheral blood of an inoculated animal may not occur until the third week. Some textbooks and writings on the subject state that it appears between the fifth and fourteenth days. In the 2 cases reported here the spirillum was not found until the sixteenth and seventeenth days, and in other instances the first appearance has been as late as the thirty-seventh day.⁶

COMMENT

These 2 patients with rat bite fever were in the hospital at the same time but were otherwise not related. Some of the clinical features showed striking similarities. The incubation periods were long, the skin eruptions resembled each other closely, the fevers were of the same type, and both infections responded promptly to neoarsphenamine therapy. Points of dissimilarity were the prominence of nausea and vomiting in case 2 and the leukocytosis which accompanied the febrile periods in case 2. Neither patient exhibited evidence of arthritis while under observation, although patient 2 gave a history of swelling around the wrists, elbows, knees and ankles before admission to the hospital.

It is of interest that three other cases of rat bite fever due to *Spirillum minus* have been identified in Atlanta,⁷ whereas in Brown and Nunemaker's study of 8 cases in the Baltimore area *Streptobacillus moniliformis* appeared to be the etiologic agent in every instance. Possibly these differences are due to variations in the parasites harbored by rats in different localities.

SUMMARY

In 2 cases of rat bite fever *Spirillum minus* was isolated from the blood by mouse inoculation. Cultures of the blood for *Streptobacillus moniliformis* were negative.

5 McDermott, E. N. *Quart. J. Med.* 21: 433 (April) 1928.
6 Ripley, H. S., and Van Sant, Helen M. *Rat Bite Fever Acquired from a Dog*, J. A. M. A. 102: 1917 (June 9) 1934.
7 Leadingham, R. S. *Am. J. Clin. Path.* 8: 333 (May) 1938.

THE PROPHYLACTIC VALUE OF SULFADIAZINE

IN THE CONTROL OF MENINGOCOCCIC MENINGITIS

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From Jan 1, 1943 to April 30 1943 more than 1,300 cases of meningococcic meningitis occurred among military personnel in the Fourth Service Command. During this period the attack rate for the disease varied widely from post to post. In some installations only sporadic cases were found, in others the number of cases reached epidemic proportions. Generally speaking, however, the disease was more prevalent in stations where large numbers of recently inducted men were assembled for training purposes.

The customary control measures employed during outbreaks of meningococcic meningitis include quarantine, prevention of overcrowding, protection from fatigue and exposure, and the prompt hospitalization or isolation of all cases of common respiratory illnesses. It is admitted, however, that these measures are only partially effective and, under conditions of active military training, can be properly applied only with considerable difficulty. It seemed desirable, therefore, to seek additional means of controlling this disease particularly among the relatively "unseasoned" recent inductees.

To be useful under military conditions, any control measure proposed must be applicable to large numbers of individuals without causing serious interruptions in daily activities. The remarkable effectiveness of sulfadiazine in the treatment of meningococcic meningitis suggested that it might be of prophylactic value in the control of this disease among troops. There is evidence that other sulfonamides, namely sulfanilamide and sulfapyridine, may have some prophylactic value in curbing outbreaks of meningitis and eliminating meningococci from the nasopharyngeal mucosa.¹ Dingle

and his associates² have pointed out that meningococci disappear promptly from the nasopharynx of patients undergoing treatment with sulfadiazine. This implies that sulfadiazine may be effective in the treatment of meningococcus carriers. Although the exact role of the carrier in relation to the spread of meningococcic meningitis is not entirely clear, it seems logical that a measure which can quickly reduce the carrier rate to a low level may be valuable in retarding sharp outbreaks of this disease. Indeed, reports transmitted from the Office of the Surgeon General have indicated that sulfadiazine has been of value in controlling meningitis at several army posts in recent months.

Studies undertaken at the Fourth Service Command Laboratory have shown that meningococci are rapidly eliminated from the nasopharynx following the peroral administration of 3 Gm of sulfadiazine daily for three days. In a small series of persistent carriers treated in this manner, nasopharyngeal cultures became negative for meningococci twenty-four hours after the initiation of therapy, and repeated nasopharyngeal cultures, obtained at weekly intervals, remained negative for varying periods of observation up to eight weeks. These results suggested that it might be possible, by treating all members of a closed group with sulfadiazine at one time, to decrease the number of individuals harboring meningococci during epidemic periods to a point where few, if any, cases of meningitis would occur. Our purpose in this communication is to report the results of the large scale prophylactic administration of sulfadiazine to more than 15,000 soldiers stationed at two posts where meningococcic meningitis was particularly prevalent during the spring of 1943.

CAMP A

Occurrence of Meningococcic Meningitis—Camp A is a newly constructed installation located in rural Mississippi. The camp was first occupied by troops in August 1942, but as late as January 1943 the total military population had reached only 3,100. Thereafter the strength of the post rose rapidly until on March 15, 1943 over 34,000 soldiers were stationed there. These included approximately 15,000 men who had arrived at Camp A during the latter part of February 1943 to form the M Infantry Division. The majority of this division was made up of men under 20 years of age who had been inducted into service during the preceding sixty days and who had been assembled from all regions of the United States. The M Division was barracked in areas III, IV and VI of Camp A (fig 1). These areas are geographically and functionally separate from one another and at the time of this study were reserved solely for this organization. Two infantry regiments were assigned to area III, while areas IV and VI were occupied by an infantry regiment, the division artillery and special troops. Members of the division were housed in 32 man barracks of the theater of operations type. Forty-two men occupied double decked bunks in each barracks, sleeping in head to foot arrangement. Shortly after arrival at Camp A all men assigned to the M Division began a course of basic training. The program did not seem to be excessively rigorous and physical exhaustion was no greater than might be expected in fresh troops recently inducted from civilian life.

From the Fourth Service Command Medical Laboratory, Fort McPherson, Georgia.
The cooperation of Col S W French, M C Col C G Souder, M C Col H M Thomas, Jr, M C Col D C Campbell, M C Col T E Scott, M C Lieut Col George Prazak, M C Lieut Col T C Rich, M C Major W B Malcolm, M C Capt V D Francis, M C Capt R J Reedy, Sn C Capt S C Selkowitz, M C Capt M A Fath, M C Lieut L L Lieberman, M A C, Lieut Saul Freedman, M A C, Lieut M W O'Neil, Jr, M A C, and Lieut J R Klett, M A C greatly facilitated the course of these studies. Miss A M Gunderson, Miss P L Moorman, Miss L L Laffitte, Miss M E Askew and Sgt R J Reiber rendered technical assistance. Appreciation is further expressed to Brig Gen J S Simmons and Col Stanhope Bayne-Jones, Preventive Medicine Section, Office of the Surgeon General, U S Army, Washington, D C for their assistance. 1 Bryant Joseph and Fairman H D. Chemotherapy of Cerebrospinal Fever in the Field. *Lancet* 1: 923-926 (April 22) 1939. Meehan J F and Merrilles, C R. Outbreak of Cerebrospinal Meningitis in Foundling Hospital. *Treatment of Carriers with M & B 693*. *M J Australia* 2: 84-90 (July 27) 1940. Seid S E. Meningitis Epidemic Among Navajo Indians. *J A M A* 116: 923-924 (Sept 14) 1940. Fairbrother R W. Cerebrospinal Meningitis. Use of Sulfonamide Derivatives in Prophylaxis. *Brit M J* 2: 859-862 (Dec. 21) 1940. Sniffeld M E. Straker Edith and Topley W W C. Antiseptic Sulfapyridine. *M J* 1: 145-150 (Feb 1) 1941. Gray, F C and Gear J. Sulfapyridine M & B 693 as a Prophylactic Against Cerebrospinal Meningitis. *South African M J* 15: 139-140 (April 12) 1941. Awe C D, Babione R W and DeLamater, J N. Meningococcic Meningitis in the San Diego Area During 1942. *U S Nav M Bull* 41: 625-634 (May) 1943.

2 Dingle J H, Thomas Lewis and Morton A R. Treatment of Meningococcic Meningitis with Sulfadiazine. *J A M A* 116: 2666-2668 (June 14) 1941.

During the five week period immediately following activation (i.e. from Feb 15 to March 22, 1943) the weekly hospital admission rate for common respiratory diseases in the M Division rose sharply from 13.5 to 42.9 per thousand. Although all sections of the division contributed to this high incidence of respiratory illnesses, the units of the division housed in areas IV and VI consistently showed a slightly higher attack rate than

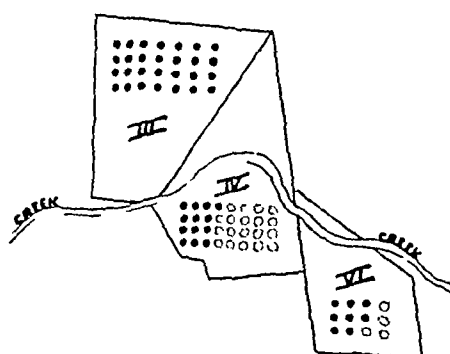


Fig. 1—Distribution of meningococcic meningitis M Division, Camp A 1943. Solid dots, cases from February 21 to March 22. Hollow dots, cases from March 22 to May 16.

did the two infantry regiments stationed in area III. During this same length of time the weekly hospital admission rate for common respiratory diseases in all organizations at Camp A other than the M Division fell steadily from 15.9 to 6.2 per thousand.

The first cases of meningococcic meningitis at Camp A occurred during the week of January 24. During the next eight weeks there were 79 cases of cerebrospinal fever in the camp. Meningitis first appeared in the M Division on February 26. The earliest cases occurred among troops stationed in area III, and it was not until one week later that additional cases were found in the remainder of the division. The first case of meningitis in the M Division was in a man who had arrived at Camp A nine days previously. In all other early cases the time interval between arrival at Camp A and the onset of symptoms exceeded nine days. It is assumed, therefore, that this outbreak of meningitis in the M Division probably developed in situ at Camp A and that no clinically recognizable cases were introduced from other military installations. Of the 79 cases of meningococcic meningitis admitted to the Station Hospital during the period from January 24 to March 21, 49 originated in the M Division. Twenty-eight of these occurred among the troops housed in area III and 21 in the other units of the division. The distribution of these cases, by areas, is shown in figure 1.

To summarize, then, the M Division constituted a large group of men, essentially homogeneous in age and duration of service, who were living under similar environmental circumstances. In the presence of a high incidence of meningococcic meningitis this organization seemed to offer an outstanding opportunity to study, under extraordinarily well controlled conditions the prophylactic value of sulfadiazine in the control of this disease.

Method of Study—The entire personnel of the organizations quartered in area III were selected for treatment (fig. 1). This group numbered approximately 8,000 men. The remainder of the M Division, namely the 9,300 men barracked in areas IV and VI, served as an untreated control (fig. 1). At the time of institution of prophylactic treatment the weekly attack rate for meningococcic meningitis in both the treated and control groups was slightly greater than 1.3 per thousand.

Before administration of the drug the meningococcus carrier rates in the treated and control groups were estimated. Nasopharyngeal cultures were obtained from

100 individuals selected at random in each group. Sterile bent wire swabs were used to procure material for culture. These were streaked on chocolate agar plates prepared from Bacto-Proteose No. 3 agar and Bacto-Hemoglobin. P-aminobenzoic acid was added to this medium in a concentration of 5 mg per hundred cubic centimeters. The plates were incubated under reduced oxygen tension in a candle jar for twenty hours at 37°C. Subcultures were then made on the same medium. Identification of meningococci was confirmed by inoculation of differential sugar mediums and macroscopic slide agglutination reactions with polyvalent antimeningococcus horse serum and group specific antimeningococcus rabbit serums. The carrier rate among the troops to be treated was 36.0 per cent, in the control group the rate was 38.0 per cent. The predominant meningococcus found in each instance was group I.

On March 22-24 all individuals in the group to be treated were simultaneously given 1 Gm of sulfadiazine by mouth three times daily. Thus each man received 9 Gm of medication. The drug was issued by the officer in command of each unit at the mess hall as the men entered for their meals. A noncommissioned officer ascertained that the troops actually swallowed the tablets. Instructions were issued to the effect that any man who became ill after taking the drug was to report immediately to the dispensary for observation by a medical officer. Each man was also advised to drink at least 1,500 cc of water daily during treatment.

Results—During an eight week period of observation subsequent to the completion of prophylactic therapy no cases of meningococcic meningitis developed among the 8,000 treated men in area III. At the same time, although the attack rate for the disease exhibited a definite decrease, 23 cases were found among the 9,300 untreated controls. The occurrence of meningococcic meningitis in the treated and control groups, as well as in all organizations at Camp A other than the M Division, from January 24 to May 16, is shown in figure 2. These results clearly suggest that the administration of sulfadiazine to all personnel within

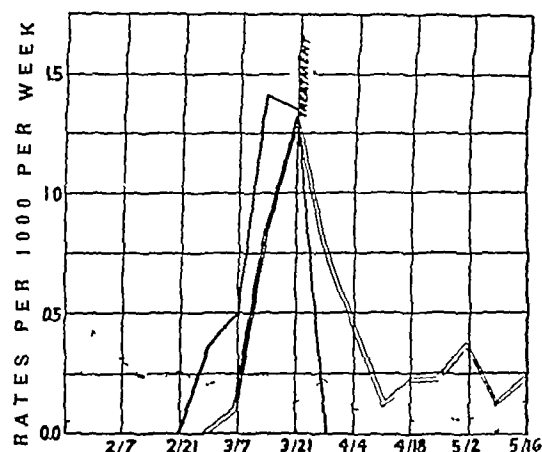


Fig. 2—Incidence of meningococcic meningitis in treated and control groups and in all organizations other than M Division, Camp A, Jan. 24, 1943 to May 16, 1943. Solid line, treated group. Broken line, all organizations except M Division. Double line, control group.

a large group at one time may result in the abrupt cessation of an outbreak of meningococcic meningitis.

Additional meningococcus carrier surveys were carried out at intervals in the treated and control groups after the completion of prophylaxis. In each instance nasopharyngeal cultures were obtained from the same individuals employed in the original surveys. The

results of these studies are shown in table 1. These data indicate that the administration of sulfadiazine by mouth effectively lowered the meningococcus carrier rate in the treated group at a time when the incidence of carriers among the untreated controls increased appreciably. It is also interesting that the increase in the carrier rate in the latter group occurred contemporaneously with a decline in the attack rate for meningococcic meningitis among these men.

During the prophylactic administration of the drug at Camp A no toxic reactions requiring hospitalization occurred nor was there any interference with the scheduled basic training program of the treated troops. The

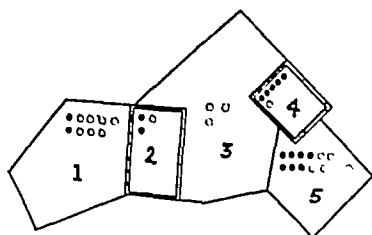


Fig 3—Distribution of meningococcic meningitis, N Division, Fort B, 1943. Solid dots: cases from March 21 to April 7. Hollow dots: cases from April 7 to June 2.

minimal toxic symptoms frequently noted during sulfadiazine therapy, however, were observed by almost 10 per cent of the men questioned. These included headache, dizziness, loss of visual depth perception, lassitude, tinnitus and nausea. In 2 cases treatment was discontinued because of the development of generalized skin eruptions. Blood sulfadiazine levels, obtained from samples of 10 men on duty subsequent to this study, showed average fasting levels, following each day of treatment for three days, of 5.1, 5.1 and 4.5 mg per hundred cubic centimeters respectively. The method of Bratton and Marshall³ was used.

FORT B

Occurrence of Meningococcic Meningitis.—Fort B is a large, permanent military reservation with facilities for housing more than 50,000 men. This post has had a large military population for the past two years, but the majority of the troops now in residence have been there less than twelve months.

The N Division is a relatively new organization which arrived at Fort B in the latter part of March 1943. Most of the troops were young inductees who had been in service less than sixty days. These men had been assembled from widely scattered parts of the United States in a manner similar to that already described for the M Division at Camp A.

The section of Fort B occupied by the N Division is shown in figure 3. Areas 2 and 4 were each occupied by an infantry regiment, while the remainder of the division was assigned to areas 1, 3 and 5. The men were housed in two story, 63 man barracks and slept in cots arranged in head to foot fashion. Shortly after arrival a course of basic training was instituted for all members of the division. This program was comparable to that prescribed for the M Division at Camp A.

During the four weeks immediately following the arrival of the N Division at Fort B, i. e. from March 14 to April 10 the weekly hospital admission rate for common respiratory diseases in the division rose from 7.0 to 24.2 per thousand. This was in contrast to the decline in weekly admission rates for common respiratory illnesses from 9.0 to 4.7 per thousand which

occurred in all organizations other than the N Division at Fort B during the same period. The sharp rise in the incidence of upper respiratory illnesses in the N Division immediately after its activation was strikingly similar to the rise previously observed among the newly assembled troops of the M Division at Camp A shortly after their arrival.

From Nov. 13, 1942 to April 6, 1943, 147 cases of meningococcic meningitis were admitted to the Station Hospital at Fort B. One hundred and twenty-four of these occurred during the period from Jan. 1, 1943 to March 31, 1943. During the latter half of February and the first three weeks of March, however, the incidence of cerebrospinal fever at this post fell slowly until only sporadic cases were found. Only after the arrival of the N Division did the incidence of the disease again show an increase. Meningitis first appeared in the N Division during the week of March 21. The earliest cases occurred among troops in divisional areas 1 and 5 (fig. 3). It was not until the first week of April that cases of the disease were found among the members of the infantry regiments stationed in areas 2 and 4. From March 21 to April 6, 16 cases of meningococcic meningitis appeared in the N Division. The distribution of these cases within the divisional area is shown in figure 3. In 3 instances the disease developed in men who had arrived at Fort B less than ten days previously. It is possible, therefore, that these men were in the incubation period of the disease when they were introduced into the population of the N Division.

The conditions observed in the N Division were similar in virtually all important respects to those previously encountered in the M Division at Camp A. Thus the N Division seemed to present another opportunity to study, under well controlled circumstances, the possible prophylactic value of sulfadiazine in checking epidemics of meningococcic meningitis among large groups of individuals.

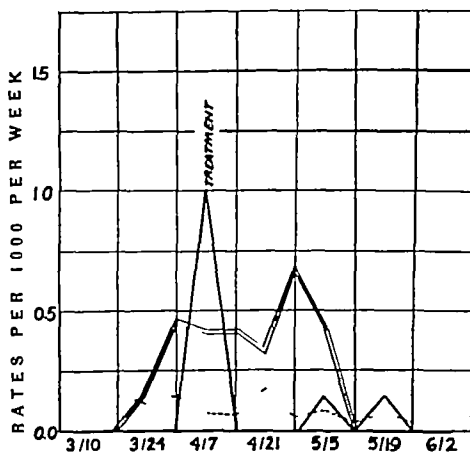


Fig 4—Incidence of meningococcic meningitis in treated and control groups and in all organizations other than N Division, Fort B, March 10, 1943 to June 2, 1943. Solid line: treated group. Broken line: all organizations except N Division. Double line: control group.

Method of Study.—Largely because of the sharp rise in the incidence of meningitis which had been observed among the troops living in areas 2 and 4 these men were selected for prophylactic therapy (fig. 3). The total strength of the group to be treated was approximately 7,000. The remainder of the N Division, which included all organizations quartered in areas 1, 3 and 5

served as a control. The approximate strength of this group was 9,500 men. During the week immediately prior to therapy, the weekly attack rate for meningococcic meningitis in the group to be treated had risen rapidly from 0.0 to 1.0 per thousand. This compared with a weekly rate of 0.41 per thousand in the control group at that time.

Before the institution of prophylactic therapy the incidence of meningococcus carriers in the treated and control groups was estimated in a manner similar to that previously employed at Camp A. The carrier rate in the group to be treated was 30.0 per cent, in the control group the rate was 29.0 per cent. Of the meningococci found in these carriers, 37.2 per cent were group I micro-organisms.

Results—In a period of observation which extended for eight weeks after the institution of treatment, 2 cases of meningococcic meningitis occurred in the N Division among troops who received the drug.⁴ In the untreated group, however, 17 cases were found during this time. These results are shown graphically in figure 4. For purposes of comparison the hospital admission rate for meningococcic meningitis in all organizations other than the N Division from March 10 to June 2 is also included in figure 4. These data confirm the findings initially observed at Camp A and in addition indicate that the prophylactic peroral administration of as little as 2 Gm of sulfadiazine daily for two days is effective in curbing outbreaks of cerebrospinal fever among large numbers of troops.

TABLE 1—Incidence of Meningococcus Carriers in Treated and Control Groups

Date of Culture	Camp A March 20-May 31, 1943								Control Group							
	Treated Group								Control Group							
	Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping					Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping				
				I	II	IIa	Poly valent*					I	II	IIa	Poly valent*	
March 20-21 (before treatment)	100	36	36.0	22	3	0	11		100	38	38.0	20	1	1	16	
March 31-April 1	98	3	3.1	3	0	0	0		96	29	30.0	12	0	2	15	
April 7-8	96	2	2.1	1	0	0	1		98	56	57.1	32	0	2	22	
April 14-15	98	2	2.0	1	0	0	1		96	49	51.0	26	1	2	20	
April 21-22	97	7	7.2	2	1	1	3		96	55	57.2	29	1	3	22	
May 20-31	147	8	5.4	2	1	2	3		147	82	55.8	51	6	6	19	

* Includes micro organisms which have biologic reactions of meningococci and agglutinate in polyvalent antimeningococcus horse serum but which do not agglutinate in group specific antimeningococcus rabbit serums.

TABLE 2—Incidence of Meningococcus Carriers in Treated and Control Groups

Date of Culture	Fort B, April 6-May 27, 1943								Control Group							
	Treated Group								Control Group							
	Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping					Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping				
				I	II	IIa	Poly valent*					I	II	IIa	Poly valent*	
April 6-7 (before treatment)	100	30	30.0	12	0	4	14		100	29	29.0	10	2	0	17	
April 13-14	100	0	0.0	0	0	0	0		100	43	43.0	19	7	3	14	
April 27-28	97	2	2.1	2	0	0	0									
May 4-5									95	28	29.5	15	4	4	5	
May 20-27	97	0	0.0	0	0	0	0		48	16	33.3	7	4	0	5	

* Includes micro organisms which have biologic reactions of meningococci and agglutinate in polyvalent antimeningococcus horse serum but which do not agglutinate in group specific antimeningococcus rabbit serums.

Because additional studies undertaken at Camp A had suggested that smaller doses of sulfadiazine might also be effective as a prophylaxis in cerebrospinal fever, all individuals in the treated group in the N Division were given at the same time 1 Gm of sulfadiazine by mouth twice daily for two days. The drug was issued to the men as they entered the mess halls for breakfast and supper. Treatment started on the evening of April 7 and was completed on the morning of April 9. Precautions similar to those at Camp A were taken to ascertain that each man swallowed the tablets. In this instance, however, no instructions regarding possible toxic symptoms were given, since it seemed desirable to observe the treated group without introducing the factor of suggestion.

At intervals subsequent to the completion of prophylactic treatment, meningococcus carrier studies were undertaken in the treated and control groups. As at Camp A, the nasopharyngeal cultures were obtained each time from the same men originally included in the carrier surveys. The results of these observations are set forth in table 2. These findings are essentially the same as those observed at Camp A in that the prophylactic administration of sulfadiazine by mouth appreciably reduced the meningococcus carrier rate among the men who received the drug.

4 One of these men had been admitted to the Station Hospital for measles. Nine days after admission, while still hospitalized he developed meningitis. The other man was transferred to an untreated organization three weeks after he had received the drug. Fourteen days after transfer signs of meningitis appeared.

The administration of 2 Gm of sulfadiazine daily for two days apparently caused very few toxic symptoms among the 7,000 treated men in the N Division. There was no interference with the scheduled basic training program during the period of treatment. Indeed, the questioning of a large number of men by regimental medical officers and the staff of the Fourth Service Command Laboratory failed to reveal the occurrence of any definite toxic effects. It will be remembered that efforts were made to eliminate the factor of suggestion during the treatment of this group. Blood sulfadiazine levels, obtained at random from 20 men two hours after the third dose of sulfadiazine and eight hours after the last dose, ranged from 27 to 54 per hundred cubic centimeters by the method of Bratton and Marshall.*

COMMENT

These data indicate that the prophylactic administration of sulfadiazine by mouth, even in relatively small doses, is a safe and effective method for curbing epidemics of meningococcic meningitis among large numbers of troops. This method of prophylaxis might also prove to be of value in terminating outbreaks of this disease in other situations, for example on troop transports at sea or in schools, orphanages and other institutions.

In these studies the drug was given at one and the same time to all members of the groups to be treated. It should be emphasized that these were closed groups in which there was little opportunity for the usual fortuitous reinfection from outside sources to occur. It seems probable that the effectiveness of the prophylaxis described herein depended on (1) treating all individuals in the group simultaneously, (2) treating all personnel who joined the group subsequent to the institution of prophylaxis before they were incorporated into the group and (3) keeping the treated group closed to reinfection from outside sources.

SUMMARY

1 Sulfadiazine was administered prophylactically to more than 15,000 soldiers in residence at two posts where meningococcic meningitis was particularly prevalent during the spring of 1943. In one instance 3 Gm of drug was given by mouth daily for three days, in the other the dose was 2 Gm daily for two days.

2 Following the institution of prophylactic therapy the incidence of cerebrospinal fever among the treated individuals fell abruptly. Only 2 cases of the disease occurred during a subsequent period of eight weeks of observation. At the same time 40 cases were found among 18,800 untreated controls.

3 Meningococcus carrier surveys showed that the administration of sulfadiazine by mouth effectively lowered the carrier rate in the treated group at a time when the incidence of carriers among the untreated controls remained high or actually increased.

4 No serious toxic reactions resulted from the large scale administration of the drug. The treated men continued their usual daily activities without interruption of the scheduled basic training program during the period of treatment.

Clinical Notes, Suggestions and New Instruments

A CASE OF STAPHYLOCOCCIC ACTINOPHYTOSIS (BOTRYOMYCOSIS) IN MAN

THE TENTH REPORTED HUMAN CASE

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At the present time the rapid advances in chemotherapy make it increasingly important to identify precisely the etiologic agents of infections, since in many cases the selection of a chemotherapeutic drug for treatment is as dependent on the nature of the infecting organism as it is on the clinical picture of the disease. With this in mind we believe it might be of value to report a case of a rare infection in man and point out the ease with which the disease can be misdiagnosed.

T. S. V., a white man aged 21, married, a medical student, consulted a physician in the clinic on June 5, 1943 about a small mass near the anus, present for about two months and uncomfortable only in certain sitting positions. He knew of no injury to the area.

Examination showed a mass about 10 mm. in diameter situated in the fatty tissue of the perineum just medial to the tuberosity of the left ischium, and a smaller one medial to this but with no demonstrable connection with the anus. The superficial skin was mildly reddened over the larger mass. The mass was easily circumscribed and only slightly tender. Rectal examination gave no additional information.

The impression was that this was an infected sebaceous cyst and the patient was advised to use hot compresses over the area affected.

On June 12 he was seen again. There was no localization of the infection. He was hospitalized for hot compresses, because he was uncomfortable sitting in class and had poor facilities for treatment at his home. His temperature was normal. The white blood count was 9,600 with 67 per cent polymorphonuclear cells, 30 per cent lymphocytes, 1 per cent monocytes and 2 per cent eosinophils.

On June 14 the mass was incised, yielding about 2 drachms of granular sanguinopurulent drainage. Recovery was rapid. He was dismissed from the hospital on June 16 with the incision closed. There has been no recurrence to date.

Pus removed from the abscess at operation was examined at the department of bacteriology and found to contain small white granules about half again as large as a pinhead. Under the microscope these granules were coarsely lobulated and the surface was covered with tightly packed clublike projections. Under both the low and high powers of the microscope the granules appeared identical with the sulfur granules observed in actinomycosis when they were examined either as fresh mounts or after treatment with 20 per cent potassium hydroxide solution. Gram stains were prepared from a crushed granule but instead of showing the characteristic fragments and fine branched, gram-positive mycelium as are found in true sulfur granules, only masses of staphylococci were present. Smears from a number of the granules yielded the same results, but a careful examination of smears prepared from the pus surrounding the granules showed only a few staphylococci after long examination. The cells present were considerably disintegrated and consisted chiefly of polymorphonuclear neutrophilic leukocytes and considerable numbers of mononuclear cells. The presence of granules composed of masses of staphylococci with few of the bacteria found outside the granules identifies the infection as staphylococcic actinophytosis or botryomycosis. Cultures from the crushed granules yielded a pure culture of *Staphylococcus aureus*. This was somewhat less pigmented than usual and showed no hemolysis on blood agar but was coagulase positive and gave the usual cultural reactions.

From the Department of Bacteriology, University of Kansas School of Medicine (Dr. Drake) and the Watkins Memorial Hospital, University of Kansas (Dr. Sudler, consultant in Surgery, and Dr. Canuteson, Director of Student Health Service).

Botryomycosis was described by Bollinger¹ in 1870 as a disease of horses, usually following castration by crude methods, characterized by a granulomatous lesion that slowly involves the surrounding tissues but only rarely becomes generalized. In pus discharged from the lesion the causative organism occurs as small, lobulated and frequently clubbed granules which were believed to be mycotic in nature and were assigned to the genus *Botryomyces*. The infection has also been reported in other animals.²

The true nature of the disease was shown by Magrou³ in 1914. This author carried out a complete investigation which showed that the causative organism was *Staphylococcus aureus*, identical in all respects with ordinary strains of the bacterium but which occurred in the tissues in the form of peculiar granules rather than scattered throughout the pus as in ordinary staphylococcic infections. Magrou showed that these granules were composed of masses of staphylococci embedded in a matrix and were usually surrounded by some kind of membrane. The periphery of the granules, which were usually lobulated, was frequently covered by closely packed clubs as in the sulfur granules of actinomycosis. He pointed out that the lesions in horses usually contained horsehairs as foreign bodies and was able to reproduce the disease in rabbits and guinea pigs by inserting into the testes horsehair contaminated with staphylococci. Further work showed that foreign bodies were not absolutely necessary but that the disease could be produced in experimental animals by the injection of small numbers of *Staphylococcus aureus*. It was necessary to have the number of organisms within a definite range so that there were too few to produce a purulent inflammation but yet sufficient so that they would not be absorbed with little or no tissue reaction. Once the correct range has been established for any culture, the disease could be produced at will both with cultures isolated from botryomycosis and with ordinary strains of staphylococci.

In his paper, Magrou recorded from the literature (Kaiser and Gryns) one probable human case of botryomycosis occurring as an osteomyelitis. Since that time 8 other human cases have been recorded. Masson⁴ in 1918 reported a second case in man, also occurring as an osteomyelitis, following a hip fracture by a shell fragment. Two cases of nontraumatic osteomyelitis of botryomycotic nature were reported by Fumagalli⁵ in 1928. Berger and his associates⁶ reported the fifth case in 1936 and the first case in which the infection was confined to soft tissues, occurring as an infection of the genital tissues of a woman. They also point out that a much more common infection in man, granuloma telangiectaticum, has erroneously been called botryomycosis and, since in addition the true disease is not a mycosis, suggest that the infection might better be termed "staphylococcic actinophytosis." The sixth human case was observed by Plaut⁷ in 1937 as an abscess of the abdominal wall, which contained a broom straw in addition to the typical granules. The seventh and eighth cases were observed by Kimmelstiel and Oden⁸ in 1939 as abdominal abscesses, both of which contained fragments of fish bones. One of these cases was admitted by the authors to be questionable. The ninth case was recorded in 1941 by Fink⁹ as a liver abscess with involvement of the lung by both direct extension and metastases.

It would appear from the small number of reported cases that the disease is rare in man, but there can be little doubt that this rarity is more apparent than real. Of the recorded cases several have been diagnosed only by the examination of tissues removed at autopsy or at operation, so that many cases are no doubt missed. This infection can readily be confused with actinomycosis or may be dismissed as a simple, chronic,

inflammatory process. The granules are usually quite small and readily overlooked unless the pus is carefully examined with the naked eye. Simple smears of the exudate are unlikely to contain the granules, so that there can be little doubt that in many cases the granules have been overlooked. Plaut especially points out the importance of differentiating between botryomycosis and actinomycosis, since the prognosis is more favorable in botryomycosis and less radical treatment is necessary. This is borne out by our case, which responded readily to simple drainage. Of the reported infection involving only soft tissues, Berger's patient was still alive twenty months after the onset although unimproved, Plaut's patient recovered rapidly after operation, one of Kimmelstiel and Oden's patients died of complications following operation but the other was completely cured one month after operation, and Fink's patient died from a generalization of the infection but the disease was not diagnosed until autopsy.

Confusion in diagnosis would arise from observation of the granules in fresh material since they are almost identical under low and high powers of the microscope with the granules observed in actinomycosis. It is essential that crushed granules be examined by means of the gram stain. This procedure readily shows that the granules are composed of staphylococci rather than the branched, fine, gram-positive mycelium that makes up the sulfur granules of true actinomycosis. This procedure should never be neglected, since this is necessary to differentiate between the granules of staphylococcic actinophytosis, actinobacillosis, actinomycosis and mycetoma. In staphylococcic actinophytosis the granules are composed of masses of staphylococci embedded in a matrix of some kind and are usually surrounded by a refringent membrane the surface of which is often bedecked with clubs. Occasionally granules from old lesions are calcified. The nature of the matrix and of the limiting membrane are the subject of some dispute. Some authors believe that either or both materials arise from the organisms, probably from proteins derived from disintegrated bacteria. However, others believe that either or both of these substances arise from the host tissues. In some cases it would appear that the hard membrane described was due to calcification. Kimmelstiel and Easley¹⁰ claim to have produced the disease in experimental animals and to have traced the development of the matrix from disintegrating tissue elements. This problem, however, is common to the formation of club covered granules in all of the diseases mentioned and need not be considered here in any detail.

Even considering the fact that many cases of this disease are probably overlooked, it still seems to be less common in man than in lower animals and especially the horse. This is rather surprising in view of the fact that staphylococcic infections are more common in man than in the lower animals. Although Magrou considered that the natural development of the disease was primarily due to infection with a limited number of organisms, this view has been questioned by several authors, who point out that man is frequently, if not more frequently, exposed to infection with a limited number of staphylococci. The importance of foreign bodies has been stressed by a number of workers, and their importance in the development of experimental infections has been shown by Kimmelstiel and Easley. In at least 7 of the reported cases in man, foreign bodies, such as bony sequestrums, fish bones and a broom straw, have been found in the lesions.

We would suggest, at present on purely theoretical grounds, that the development of the disease is dependent on a careful balance between the defense mechanisms of the host and the invasive powers of the organisms. Several workers have pointed out the rather low virulence for experimental animals shown by cultures of *Staphylococcus aureus* isolated from staphylococcic actinophytosis. In our case the organisms presented the anomalous characteristic of lack of hemolytic powers but was still coagulase positive, as is characteristic of most pathogenic strains. This lower virulence is a point in favor of our theory, as is the fact that the infection is more common in animals possessing a higher natural resistance to staphylococci than that shown by man. The disease probably develops as a result of the entrance into the tissues of staphylococci of low invasive powers but which are able to maintain themselves

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2 Aynaud, M. *Ann Inst Pasteur* 42:256, 1928, cited by Berger.⁶

3 Magrou, J. E. *Les grains botryomycotiques*. Thesis 267, Paris, 1914.

4 Masson, P. *Lyon chir* 15:230, 1918, cited by Berger.⁶

5 Fumagalli, R. C. *Ann d'anat path* 4:513, 1927, cited by Berger.⁶

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7 Plaut, Alfred. *Botryomycosis in Man*, *Arch Path* 23:602 (April) 1937.

8 Kimmelstiel, Paul, and Oden, P. W. *Botryomycosis. Report of Two Cases of Intra Abdominal Granuloma*, *Arch Path* 27:313 (Feb) 1939.

9 Fink, A. A. *Staphylococcic Actinophytotic (Botryomycotic) Abscess of the Liver with Pulmonary Involvement*, *Arch Path* 31:103 (Jan) 1941.

10 Kimmelstiel, Paul and Easley, C. A., Jr. *Experimental Botryomycosis*, *Am J Path* 16:95 (Jan) 1940.

there, often aided by the presence of foreign bodies. This would cause the formation of a chronic inflammatory process with a purulogranulomatous tissue reaction. It is a fundamental peculiarity that all of the infections characterized by the growth of the organisms in granules are also characterized by at least a partially granulomatous tissue reaction.

TREATMENT OF VINCENT'S ANGINA OF THE TONSIL

A PRELIMINARY REPORT

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The great number of methods and combinations of drugs used by various clinicians in treatment of Vincent's angina indicates that none of them have proved entirely satisfactory. It is a common experience, whether infection is present in the gums or in the pharynx, to have these patients returning frequently over a long period of time. An apparent cure within a period of ten days is usually considered quite satisfactory, and even then, owing to frequent recurrences, the wise clinician avoids assuring his patient that he is completely cured.

The fusiform organisms and spirochetes of Vincent's angina have many of the characteristics of a secondary invader. It is commonly believed that these organisms enter only into tissues weakened by some other cause. What this cause is has not definitely been determined, but there is some evidence that nutritive factors play a part. It is also possible that some associated infection may prepare the ground.

Vincent's infection of the tonsil was seen recently in several soldiers returning from the South Seas. These men had been exposed to strenuous physical conditions for a considerable period of time with meager rations while on front line duty. They were all sent back to the zone of the interior with various types of disability. On account of the likelihood of a pronounced increase of cases of this type under war conditions, it is considered advisable to make this preliminary report showing remarkable recovery under treatment with sulfathiazole. The first 2 patients had initial treatment with other methods without effective results. Each patient reported definite improvement in soreness of the throat within twenty-four hours, with most symptoms gone in forty-eight hours and practically complete clinical recovery within seventy-two hours under treatment with sulfathiazole.

The dosage and method of administration ultimately used consisted of a 0.5 Gm sulfathiazole tablet dissolved on the tongue every two hours during the day and 1 Gm dissolved on the tongue every four hours during the night. This was continued for two days, at which time the patient would voluntarily discontinue medication, unless directed otherwise, because symptoms had disappeared. When infection also was present about the gum margins, it was advised that the sulfathiazole tablet be moistened with a few drops of water to make a paste and this used to rub into the gum margins. Excellent results were secured on the gums in 1 case using this method, but it was not tried sufficiently to warrant any expression of opinion.

A search of the literature fails to reveal any use of sulfonamide drugs for this purpose, except 1 case treated by Perner.¹ A remarkable cure was secured with azosulfamide. However, Spink in his book on "Sulfanilamide and Related Compounds" states that sulfanilamide has been used in treatment of gingival infections such as pyorrhea and Vincent's angina with no benefit from local or oral administration.

REPORT OF CASES

CASE 1—E. E. B. A man aged 26, was sent in with a sore throat of seven days' duration and a grayish membrane on the tonsil. Microscopic examination showed great masses of fusiform bacilli and spiral forms from the necrotic area. He was given 0.045 Gm of mapharsen intravenously and local treatment to the tonsil consisting of aqueous 10 per cent mercur

ochrome. I had previously secured excellent results by using neoarsphenamine intravenously but at this time the drug was not available. The patient returned in two days with the throat still very sore, and local treatment with silver nitrate and mercurochrome was given. The same treatment was repeated the following two days, and, owing to some ulceration of the gum margin anteriorly, it was advised that sodium perborate paste be massaged into the gums three times daily. On the fifth day little improvement was noted in the condition, so it was decided to give sulfathiazole orally, 1 Gm every four hours, in addition to local treatment. The throat was much improved the following day and after forty-eight hours recovery was sufficiently complete to warrant stopping treatment. Some ulceration of the gum margins remained. It was advised to continue sodium perborate paste for two or three days. Tonsillectomy was done under local anesthesia in about another week.

CASE 2—S. W. S., a boy aged 13 years, received with a diagnosis of membranous pharyngitis of three days' duration, gave no previous history of sore throat but had suffered from dry cough for about one week. A smear from the tonsils showed large numbers of fusiform organisms and spirals of Vincent's angina. He was first seen on March 26, 1943 and given intravenously 0.045 Gm of mapharsen, and sodium perborate paste to the gum margins. After four days there was still some soreness and some membrane present. After several days more of local treatment there was gradual recovery. On April 13 there was an acute recurrence of the infection in both tonsils. Another intravenous injection of mapharsen was given, as well as local treatment to the affected areas. On April 18 infection was still present and sulfathiazole 1 Gm every four hours, to be dissolved on the tongue, was ordered for two days. Two days later the patient was seen and had no complaints. Ulcerations had disappeared and there was no soreness in the tonsils, although there was still some infection in the gum margins. Tonsillectomy was done two days later with good results.

CASE 3—C. J. L., a man aged 23, who complained of sore throat for about ten days had a deep ulceration in the middle of the left tonsil. A smear from this area showed many fusiform organisms and spirals of Vincent's angina. The treatment consisted only of sulfathiazole 0.5 Gm on the tongue every two hours during the day and 1 Gm every four hours during the night for two days. The patient failed to return as directed. He was looked up after six days and it was found that he had felt well after two days and saw no need for returning. He was much improved after twenty-four hours. In order to prevent recurrence he was advised to take a high vitamin diet including considerable orange or grapefruit juice, greens and brewers' yeast.

CASE 4—B. N., a youth aged 20, complained of sore throat of two days' duration. An ulcerated area was present in the right tonsil and there was much ulceration of the gum margins. A smear from the tonsil showed numerous fusiform organisms and spirals of Vincent's angina. The gum margins would bleed profusely from the slightest touch. He was first seen on May 18, 1943 and given sulfathiazole 0.5 Gm dissolved on the tongue every two hours during the day and 1 Gm every four hours during the night. The next day he was much improved with the soreness of the throat much better and the ulceration in the tonsils and gum margins apparently much improved. On the third day no soreness remained and the throat and gum margins appeared practically healed.

On account of the probability of an increase in epidemics of this type due to war conditions and a lowering of the general nutritive condition in certain groups or areas it is hoped that others will try this method of treatment where more cases are available for observation. In the cases reported dietary advice or brewers' yeast were not given until the acute condition had been controlled.

The 4 cases reported are the first 4 cases treated with sulfathiazole. The very remarkable results suggest that it may be a specific cure for the condition although it is impossible to draw any conclusions. It is believed that recurrences of the infection are likely to occur from any type of treatment unless factors which cause weakened resistance in the tissues are controlled.

¹ Perner, Louis. New York State J. Med. 41: 1358 (July) 1941.

Special Article

HANDBOOK OF NUTRITION XXIV

NUTRITION IN PREVENTIVE MEDICINE

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(Concluded from page 287)

VITAMIN B₁ (THIAMINE) DEFICIENCY

Vitamin B₁ (thiamine) deficiency has been known since antiquity by many synonyms: polyneuritis endemica, barbiere (France), loempoe (Java), kakke (Japan and China), taon (Philippines), maladie des sucres (French Antilles), hinchazon (Cuba), miasmas or perneras (Brazil), maladie des jambes (Louisiana).¹⁰⁹

The classic type of beriberi is characterized by symptoms due to damage of the nervous and cardiovascular systems and produces neuritis and heart failure. In the so-called "dry" type of the disease the nervous manifestations are the predominant symptoms, and in the "wet" type the edema of heart failure is the more striking sign. Various combinations may exist. The neuritic form is seen most commonly in the United States¹¹⁰ except in some areas of Louisiana, where classic beriberi occurs.¹¹¹ Infantile beriberi occurs in breast fed infants of mothers with the disease.

Geographically the disease is widespread, occurring endemically or sporadically in all parts of the world. The classic form is common in Asia and Australasia. It occurs with less frequency in Africa, South and Central America, Europe and the United States (table 5). In the latter country about 20 per cent of chronic alcoholic addicts have neuritic manifestations of the disease.¹¹⁰ Infantile beriberi has a death rate of over 90 per cent and is a chief cause of infant death in the Far East.¹¹²

NICOTINIC ACID DEFICIENCY (PELLAGRA)

Deficiency in niacin (nicotinic acid) or closely related substances results in the disease pellagra. The most prominent symptoms of pellagra are stomatitis, dermatitis, mental changes, gastrointestinal upsets and weakness. Pellagra occurs most commonly in people of poor economic status because of the greater food restrictions in this group. In the United States most of the cases occur in the Southeastern states in the spring and early summer.

From 1933 to 1940 the annual death rates from pellagra in thirteen states of the Southeastern United States varied between 5.1 to 22.4 per hundred thousand of population.¹¹³ In 1941, four years after the discovery that nicotinic acid was the pellagra preventive vitamin, 1,868 deaths were reported from pellagra in the United States.¹¹⁴ Many other reports offer strong evidence that pellagra remains prevalent in the United States.

Bean, Spies and Blankenhorn¹¹⁵ estimate that 1 to 2 per cent of all admissions to the medical services of the Lakeside Hospital, Cleveland, and the Cincinnati General Hospital were due to pellagra. Goldsmith¹¹⁶ found evidence of pellagra in 17 per cent of 200 consecutive admissions to the medical services of the Charity Hospital, New Orleans. Many other reports of cases of pellagra both within and without the endemic areas in the United States are summarized in table 6.

Outside the United States the great endemic areas appear to be Egypt, Rumania, Bulgaria and many parts of Africa. Ellinger, Hassan and Taha¹¹⁷ found that 34.3 per cent of 204 people examined in lower Egypt had signs of pellagra. Clark¹¹⁸ states that 201 cases were admitted to the dermatologic service of the Alexandria Hospital in 1931-1933 and that the incidence at the Cairo General Hospital was 3 to 24 cases per thousand admissions to the medical services. In 1918, 70,000 cases were said to exist in Rumania,¹¹⁹ and in 1934 the death rate in Rumania is given as 11.8 per hundred thousand of population.¹²⁰ The data on Bulgaria are not so definite, but Molov¹²¹ believes that pellagra is the most common avitaminosis in that country. Trowell¹²² states that pellagra is endemic among the children in certain tribes on the east and west coasts and in Central Africa. Nauck¹²³ makes the astonishing estimate that in Transcaucasia in 1933 there were 30,000 to 50,000 pellagrins in a population of 1,300,000 or a case incidence of 23 to 38 per cent. Alessandri and his collaborators¹²⁴ estimated the number of cases in Chile in 1942 to be 3,000. Smaller numbers of cases have been reported from India,¹²⁵ Russia,¹²⁶ China,¹²⁷ Japan,¹²⁸ South America,¹²⁹ and many of the British colonies.¹¹⁰ Exclusive of Spain, Italy and the Balkans the disease seems to be only sporadic in Europe.

ARIBOFLAVINOSIS

Ariboflavinosis is a disease due to deficiency of the water soluble vitamin riboflavin. It is characterized by the development of cracks in the skin at the corners of the mouth (cheilosis), a greasy eruption of the skin, changes in the tongue and keratitis, caused by an invasion of the cornea by blood vessels.

Because of the recent description of the disease information on its incidence is relatively scanty. In

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123 Nauck, E. G. *Beihfte z Arch f Schiffs u Tropen Hyg* **37**:85, 1933.

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125 Aykroyd, W. R. *Bull Off internat d hyg pub* **29**:2388, 1939. Batra, B. L. *Indian M Gaz* **77**:269 (May) 1942. Carruthers, L. B. *Tr Soc Roy Med & Hyg* **35**:21, 1941. Ramon, T. K.

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109 Williams, R. R., and Spies, T. D. *Vitamin B₁ (Thiamine) and Its Use in Medicine*, New York, Macmillan Company, 1938.

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1938 the Odens and Sebrell¹³⁰ felt that the disease might be common in the southern United States. Spies, Bean, Vilter and Huff¹³¹ believe it to be the most common deficiency disease in the United States. Goldsmith¹³² found an incidence of 34 per cent in 200 consecutive admissions to the medical services of Charity

additional ones cited in table 7 warrant the conclusion that the disease occurs in many parts of the United States and is very prevalent in the South.

Reports from other parts of the world are even more fragmentary than those from the United States. The disease has been reported in England¹³³ and is

TABLE 5—Reports of Vitamin B₁ (Thiamine) Deficiency

Location	Comment	References
AFRICA		
Brazzaville Eastern Congo 18th Mil Reg Fr Madagascar Algeria	Report of 12 cases in 1942 Report of 60 cases in 1940 430 cases observed 1929-1930 Outbreak in some troops in 1937 Common in famine years	Neel R. Rev. sc. méd. Afrique Fr. 1:81 1942 Wilcocks C. Trop. Dis. Bull. 37:751 1940 Malard M., and Delpat Rev. Service de San. & Mil. 106:91 1937 Sanner Ann. méd. pharm. col. 70:840 1938 Summary of Information Regarding Nutrition in the Empire London 1939
ASIA		
Burma Burma Brunei	1,564 cases in 1935 Endemic High incidence in parturient women and in children	McKinley E. B. Geography of Diseases 1935 Youmans J. B. Nutritional Deficiencies 1941 Ann. Rep. Med. Dept. (Brunei) 1935
China China (Shanghai)	Endemic 15 per cent of 700 hospital patients admitted for beriberi in 1933	Youmans J. B. Nutritional Deficiencies 1941 Kuo P. T. Chinese M. J. 55:427 1939
Hong Kong Hong Kong Hong Kong	2.8 per cent of deaths due to beriberi in 1936 18 per cent of infants at a welfare center 1941 1,601 deaths due to beriberi in 1938	Ann. Rep. Div. Med. & San. Service 1936 Febilly Lydia J. Trop. Med. & Hyg. 44:21 1941 Summary of Information Regarding Nutrition in the Empire London 1939
India India (Guntur) India (Vizagapatnam) India (Godavari)	Endemic 519 cases (1929-1930) reported 200 cases (1937-1940) reported Endemic	Youmans J. B. Nutritional Deficiencies 1941 Raman T. K. J. Indian Med. A. 12:50 1942 Raman T. K. J. Indian Med. A. 12:50 1942 Aykroyd W. R. and Krishnan B. G. Indian J. Med. Res. 20:551 1941
India (Madras) Indo China North Borneo Trengganu Siam	40,000 cases per year (1941) 3,305 cases in 1935 Sporadic epidemics 1,170 cases treated in 1936 2,000 deaths per year	Aykroyd and Krishnan ibid. 20:703 1941 McKinley F. B. Geography of Diseases 1935 Ann. Rep. M. Dept. (N. Borneo) 1936 Ann. Med. & San. Rept. (Trengganu) 1936 Bull. Health Off. League of Nations 9:301 1940 1941
AUSTRALASIA		
Australia Celebes	8 per cent of 150 infants partially deficient 1942 3,000 cases 1933-1934	Clements F. W. M. J. Australia 1942 Fleischer D. Geneesk. Tijdschr. Nederl. Indië 75:1076 1935 Abstr. Nutrition Abstr. & Rev. 6:184 1936 Indisch Verslag 1933
East Indies	1,540 cases 101 deaths in 1931 1,333 cases 129 deaths in 1932	Youmans J. B. Nutritional Deficiencies 1941 Ann. Rep. San. Bur. Imp. Jap. Gov. 1937
Japan Japan Malay Malay Nauru New Guinea and Papua New Guinea and Papua Philippines	Endemic 13,828 deaths in 1933 11,841 deaths in 1934 Endemic 1,262 deaths in 1938 Endemic 48 deaths in 1940 Epidemics occur 1935, 18,614 deaths 1934 21,419 deaths 1933 18,659 deaths 1932 17,173 deaths 1,202 cases 121 deaths in 1938	Youmans J. B. Nutritional Deficiencies 1941 Ann. Rep. of Med. Dept. (Malay) 1938 Earle K. V. J. Trop. Med. & Hyg. 44:142 1941 U. S. Army M. Bull. No. 66 Van Veen A. G. Bull. H. O. League of Nations 9:357 1940 Intergov. Conf. of Far Eastern Countries on Rural Hygiene League of Nations 1937 Ann. Rep. Med. Dept. Straits Settlements 1939
Straits Settlements	1,202 cases 121 deaths in 1938	
CENTRAL AMERICA		
Central America Costa Rica	Endemic 43 cases in 1939	Beckman ¹³² Bull. Off. San. for Pan. Am. 1939
EUROPE		
Balkans Hungary Sardinia St. Helena	Sporadic cases occur Sporadic cases reported Sporadic cases occur 200 cases in 1938	McDougall E. J. League of Nat. Health Org. Bull. 1939 Guranovskiy K. Abstr. Nutrition Abstr. & Rev. 1936-1937 Cocchi G. Rev. Clin. Pédiat. 37:103 1939 Summary of Information Regarding Nutrition in the Empire London 1939
Iceland	16 cases seen in 1933	Kilka P. V. G. Laeknabll. 6/8 18 1933 Abstr. Nutrition Abstr. & Rev. 3:82 1933
SOUTH AMERICA		
South America Brazil Argentina British Guiana	Sporadic cases occur Endemic Sporadic cases Local epidemic 1934	Cecil R. L. Textbook of Medicine 1942 Zimmerman H. M. Nelson's Loose Leaf Medicine Cossio P. and Molina B. Dia. méd. 9:1148 1937 Report of Surg. Gen. (British Guiana) 1934
UNITED STATES and CARIBBEAN		
United States United States Louisiana West Indies Trinidad	49 deaths in 1941 20 per cent of alcoholic addicts Endemic in certain areas Occurs 87 cases in 242 consecutive admissions	U. S. Bureau of the Census 1942 Jolliffe ¹³¹ Scott and Herrmann ¹³⁰ Williams and Spies ¹³⁰ Beckman ¹³¹ Earle K. V. J. Trop. Med. & Hyg. 44:150 1941

Hospital, New Orleans. Wiehl and Kruse⁶ found that 75.8 per cent of pupils in a school in the East Side of New York City had signs of mild riboflavin deficiency as did 34.4 per cent of a group of 143 WPA employees. Kruse's figures must be interpreted with care, since the diagnoses were made entirely on the changes found in the eyes which by themselves are not specific of riboflavin deficiency. Nevertheless the reports cited plus

probably widespread in India,¹³¹ China,¹³ Malaya¹³⁶ and Africa.¹³

VITAMIN C DEFICIENCY

Scurvy is a metabolic disease resulting from a deficiency of vitamin C and characterized by a general

- 133 Scarborough Harold. Brit. M. J. 2:601 (Nov. 21) 1942.
134 Aykroyd W. R. and Krishnan B. C. Indian J. Med. Research 2:411 (Oct.) 1936. Aykroyd W. R. and Verma O. P. Indian M. Gaz. 77:1 1942. Verma O. P. ibid. 77:471 (Aug.) 1942.
135 Hou H. C. Chinese M. J. 59:314 1941.
136 Laudor J. A. and Pallister R. A. Tr. Roy. Soc. Trop. Med. & Hyg. 29:121 1931.
137 Purcell F. M. Tr. Roy. Soc. Med. & Hyg. 35:133 1942.
Barlovatz A. Ann. Soc. belge de méd. trop. 21:13 1940.

130 Oden J. W., Oden L. H. Jr. and Sebrell W. H. Pub. Health Rep. 51:790 (May 12) 1939.
131 Spies T. D., Bean W. B., Vilter R. W. and Huff W. E. Am. J. M. Sc. 200:697 (Nov.) 1940.
132 Goldsmith Grace A., South M. J. 36:108 (Feb.) 1943.

TABLE 6—Incidence of Pellagra

Area and Date	Incidence	References and Comment
13 Southwestern states, U S, 1922-1940	Death rates per 100,000 population varied between 5.1 and 22.4	De Kleine ¹¹³
United States, 1933-1941	Total deaths from pellagra in United States varied from 3,000 to 1,830	Sanitary Reports ¹¹⁴
Ohio Hospitals, U S, 1942	Pellagra accounted for 1 to 2% of admissions to medical wards	Blum, Spies and Blankenhorn ¹¹⁵ noteworthy because outside endemic area
Charity Hospital, New Orleans, 1942	Pellagra found in 17% of 200 consecutive admissions to medical wards	Goldsmith ¹¹⁶
Charity Hospitals, New Orleans and Shreveport, La., 1937-1941	3 to 21 deaths yearly in these 2 hospitals	Iowe, R C New Orleans M & S J 95 407 1943 58 to 152 cases admitted yearly
Michigan, 1940	Signs and symptoms of pellagra frequent in Northern states especially in the alcoholic	Jeld, H, Jr New England J Med 223 707, 1940 states that disease is commonly overlooked in the north
California, 1928-1935	Death rates varied from 0.72 to 1.06 per 100,000 population	Smith, C F, and Stevens, I M Am J Hyg 27 590 1938
Indiana, 1934	Reports 11 cases	Fouts, P J, and Zerfas L G J Indiana State M A 27:196, 1939 all cases admitted to Indianapolis General Hospital
Kentucky, 1939	Reports 41 cases	Kooser, J H, and Blankenhorn, M A J A M A 112:2081 1939 all cases occurred in county (Perry)
Alabama, 1937	50 cases admitted to Hillman and T C 1 Hospitals Birmingham	Spies, T D Chinn, A B, and McLester, J B J A M A 108 803 1937
Alabama, 1939	Reports 977 cases of multiple B vitamin deficiency (see riboflavin table)	Spies, T D Vilter, R W, and Ashe, W F J A M A 113 931 1939 states that multiple deficiency states are very common
Canada, 1942	Reports 1 case	Quentin, T J Canad M A J 47 464, 1942
England and Wales, 1928-1938	77 deaths reported in 10 year period	Registrar General's Statistical Review of England and Wales for the years 1938, New Annual Series, No 18 H M Stationery Office London
Northern Ireland, 1942	16 cases	Deeny, J Brit M J 1 157, 1942 16 patients with suggestive skin or gastric symptoms were relieved with niacin
England, 1934-1939	8 cases	Davies, J H T, and McGregor H G Brit J Dermat & Syph 51 51 1939
England, 1941	1 case	Davis, F and Hinden F Lancet 1 10 1941 patient was alcoholic
Scotland, 1940	1 case	Robertson, D S Edinburgh M J 47 81, 1940
Italy, 1937	74 deaths in 1937	Statistica delle Cause di Morte nell'Anno 1937
Transcaucasia, 1933	30,000 to 50,000 cases estimated	Nauk 1-2 total population 1,000,000
Bulgaria	Author saw personally 253 cases in 5 years of practice	Moloy, ¹²¹ the most important avitaminosis in Bulgaria is pellagra
Rumania, 1918	70,000 cases estimated	Stannus, ¹¹⁰ source of figure is not clear in reference
Belgium, 1939	1 case	Van Bogaert L, and Vanden Berghe Bull Acad roy dl méd Belgique 4 469, 1939
Switzerland, 1938	2 cases	Bickel G Schweiz med Wchnschr 68 1150 1938
Norway, 1934-1939	18 cases	Kjelland J Nordisk Med 1 663, 1939
Netherlands 1938	10 cases	DeLangen, C D Bowsijk, J C and van Neuneuhuizen C L C Nederl tijdschr v geneesk 72 4970, 1938
Sweden, 1939	5 cases	Mindus, F Nordisk Med 1 2477 1939 many ill defined cases seen
Germany, 1939	1 case	Salm, H Munchen med Wchnschr 80 882, 1939
Spain, 1937-1938	Many in Madrid during and after Spanish Civil War	Viminez, Garcia, F, and Grande Covian F Rev clin española 1 313 1940
Rumania, 1934	Death rate 11.8 per 100,000	Jonesco Mihalesti, Cuica and Cuica ¹²⁰
Rumania (Moldavia), 1938	2 cases in 4 families comprising 33 persons	Encescu, M, and Rodenschi, A Abstr Zentralbl f d ges Hyg 41:250 1938
Brazil, 1930-1937	114 cases at Recife 16 cases in rest of Brazil	Du Costa and Castro ¹²⁰
Argentina, 1941	8 cases reported to 1941	Bjelltreich ¹¹⁹ pellagra is rare in Argentina
Chile, 1942	110 cases reported in Santiago	Alessandri ¹¹⁸ states that there are now 3,000 cases in Chile
Africa 1937	Describes 26 cases occurring in 1934-1935 in Nairobi Hospital, Kenya Colony in children	Trowell ¹²² states that the disease is endemic on east and west coasts and in Central Africa
Africa 1932-1933	145 total	Stannus, ¹¹⁰ figures collected from annual medical reports of colonies
Africa, 1937-1938	171 cases at Abu and Lagos Nigeria in 744 persons examined	Moore, D F J Trop Med & Hyg 42 109 1939
Egypt, 1937	Found pellagra in 34.3% of 204 people examined in lower Egypt	Ellinger, Hassan and Taha ¹¹⁷ pellagra is rare in upper Egypt but does occur
Egypt, 1931-1933	Rate at Cairo General Hospital was 3 to 24 cases per 1,000 admissions depending on the season	Clark ¹¹⁸
Egypt, 1938	15 cases	Alport, A C Chalhounkul P and Hunna, G Lancet 2 1400 1938
India	Pellagra is very frequent in a large percentage of infants	Aykroyd ¹¹⁹
India, 1942	Widespread	Batra ¹¹⁶ all types of deficiency disease are seen but pellagra is most widespread
India, 1941	Describes 10 cases	Carruthers ¹²⁵
India, 1940	Describes 20 cases incidence 0.6% of admissions to medical wards	Raman ¹²⁵ Vizagapatam is an endemic focus of pellagra
India, 1942	Saw 6 cases in 18 months	Ahmed Indian M Gaz ¹²⁵
India, 1939	Describes 5 cases, 12 cases seen at the medical school yearly	Sen Gupta, Rai Chaudhuri Chaudhuri and Napier ¹²⁶
India, 1942	20 cases	Ahmed J Indian M A 1-5 present in upper provinces
India, 1940	'Frequent'	Goodall ¹²⁰ in India cases of pellagra are frequently met
India, 1939	64 cases in 10 years with 1 death	Napier ¹²⁵ thinks pellagra is frequent in India but is not diagnosed
Straits Settlements and Malaya, 1937	3 cases	Ann Rep M Dept Straits Settlements, Fed Malay States and United Malay States, 1938
Malaya, 1935	2 cases	Landor, I V, and Pallister R A Tr Roy Soc Trop Med & Hyg 29 121, 1935, disease sporadic in Malaya
Straits Settlements, 1932	24 cases	Stannus, ¹¹⁰ quoting reports of medical departments of British colonies
Hong Kong, 1932	1 case	
Trinidad, 1933	1 case	Wyjasnowsky ¹¹⁶
St Christophers, 1932	2 cases	
Antigua, 1933	1 case	Yang and Huang, ¹²⁷ occurred in army camp
British Honduras, 1932	404 cases	
Bahamas, 1928-1932	20 cases at Tashkent	Lu ¹²⁷
Russian Turkestan, 1914	30 cases	
China, 1934	3 cases	Wilson ¹²⁷
Manchuria, 1934	Present in leprosy colonies	
Korea, 1926	72 cases reported in Japan to 1925	Itoh ¹²⁸
Japan, 1925	40 cases	
China, 1941	39 cases	Morris, Hwang and Kuo ¹²⁷ all from 1 war refugee camp
Korea, 1939		
		Urabe ¹²⁷

debility, progressive anemia, a hemorrhagic tendency and skeletal changes of infants and children as the result of arrestment of bone development and hemorrhage.

The disease is of worldwide occurrence. Case studies and group surveys have been reported from Africa¹³⁸ China¹³⁹ Australia¹⁴⁰ and its territories,¹⁴¹ Malaya¹⁴² the Philippines,¹⁴³ Czechoslovakia¹⁴⁴ France,¹⁴⁵ Norway,¹⁴⁶ Rumania¹⁴⁷ Spain,¹⁴⁸ Switzerland,¹⁴⁹ the Faroe Islands,¹⁵⁰ Greenland¹⁵¹ the United States¹⁵² and

of 10,000 natives studied had clinical evidence of scurvy. The crowded housing, increased incidence of infectious diseases, chronic fatigue and native customs of preparation of food were attributed as causative factors. In several studies where the incidence reported has been based on the demonstration of low blood vitamin C levels, in selected groups, the prevalence of hypo-vitamin C appears alarming. During the winter of 1937-1938 among school children studied in Lau-

TABLE 7—Incidence of Riboflavin Deficiency

Area and Year	Incidence	References and Comment
Georgia 1930	7 cases	The Odens and Sebrell ¹⁵⁰ all had cheilosis
New York 1930	15 cases	Jolliffe W, Fern H D and Rosenblum L A. New England J Med 221:24 1939 all had cheilosis
Georgia 1930	6 cases	Sydenstricker V P, Geeslin L E, Templeton C M and Weaver J W. J A M A 113:1697 1939 all had cheilosis
Alabama 1939	977 cases of multiple B vitamin deficiency	Spies T D, Vilter R W and Ashe, W F. J A M A 113:931, 1939
Alabama 1940	941 cases in infants and children	Spies, Bean, Vilter and Huff ¹⁵¹ believe ariboflavinosis to be the most common clinical deficiency disease
Georgia 1940	45 cases	Sydenstricker, V P, Sebrell W H, Cleckley H M and Kruse H D. J A M A 114:2437 1940 patients had eye lesions responding to riboflavin therapy
Georgia 1940	9 cases	Kruse H D, Sydenstricker V P, Sebrell W H and Cleckley H M. Pub Health Rep 55:167 1940 eye lesions
New York City 1941	Mild deficiency in 4.7% of 350 well to do children; mild deficiency in 75.8% of 495 pupils from low income group; mild deficiency in 34.4% of 143 WPA employees	Wohl and Kruse ⁶ diagnoses made purely on the basis of eye examination
New Orleans 1941	68 of 200 individuals admitted consecutively to medical wards of Charity Hospital had some evidence of riboflavin deficiency	Goldsmith ¹⁵² finds ariboflavinosis to be the most common deficiency
India 1937	41 cases of angular stomatitis	Aykroyd and Kishman ¹⁵⁴
India 1940	13 cases	Aykroyd and Verma ¹⁵⁴ superficial keratitis
India 1940	50 cases	Verma ¹⁵⁴ superficial keratitis
Malaya 1931	Prevalent in prisons at Singapore and Johore	Landon and Pallister ¹⁵⁵ syndrome characterized by cheilosis, glossitis, scrotal dermatitis and combined degeneration of the spinal cord
China 1941	47.0% of 186 refugees had riboflavin deficiency	Hou ¹⁵⁵
Africa Gold Coast 1940	6 cases	Pursell ¹⁵⁷ cases chiefly glossitis
Africa Belgian Congo 1940	Many types of glossitis and angular stomatitis are seen among the natives of the Belgian Congo	Barloovatz ¹⁵⁷
England 1942	3 cases	Scarborough ¹⁵³ 3 cases of keratitis responding to riboflavin deficiency

TABLE 8—Reports of Vitamin C Deficiency

Country and Year	Incidence of Scurvy Reported	Comment	References
Rhodesia South Africa 1930	80%	10,000 native mine employees	Dry ¹⁵⁴
Lausanne France 1935	90%	Survey of school children during winter months by blood vitamin C determinations attributed to drop in milk and potato content of diet	Messeri and Heimann ¹⁵⁵
Bucharest Rumania 1941	90%	Survey among school children during winter months by blood studies incidence due to inadequate winter diet	Mezincesco ¹⁴⁷
Nashville Tenn 1940	50%	Study of 500 children attending pediatric clinic by blood analysis technique	Millam ¹⁵⁶
Chaco area Uruguay 1939	34 to 15.5%	Observed incidence among hospital patients of military and civilian sources respectively	Quiroz ¹⁵³
Switzerland 1940	57%	94 soldiers studied by blood analysis	Gander and others ¹⁵⁷
Switzerland 1942	38%	100 civilians of all social and age groups employed in anti-aircraft corps	Barrelet ¹⁵³
Prague Czechoslovakia 1939	10%	180 school children studied by blood assay	Bytch ¹⁵⁹
New York City 1941	0.7%	A selected group as determined by blood analysis	Wohl and Kruse ⁶
South Carolina 1940	1.5%	400 citizens of small mill village as determined by blood studies	Croft and Snorff ¹⁶⁰
England 1942	Not significant	Selected groups of school children and medical students as studied by blood assay	Francis and Wormald ¹⁶¹ Harris ¹⁶¹

South America¹⁵³ The endemic or epidemic proportions of the disease depend on many factors. In 1932 a report from Rhodesia¹⁵⁴ revealed that 80 per cent

of 10,000 natives studied had clinical evidence of scurvy. The crowded housing, increased incidence of infectious diseases, chronic fatigue and native customs of preparation of food were attributed as causative factors. In several studies where the incidence reported has been based on the demonstration of low blood vitamin C levels, in selected groups, the prevalence of hypo-vitamin C appears alarming. During the winter of 1937-1938 among school children studied in Lau-

138 Hofmeyr H O. Proc. Staff Meet. Mayo Clin 16:644 (Oct 8) 1941.
139 Henson J. South African M J 12:918 (Dec 24) 1938.
140 Ann Rep M Services Nigeria 1936-1937. Drogoz & Henric. Ann Med Pharm. Colon 35:1093 1937.
141 Dry¹⁵⁴
139 Morgan Julia and Gault A S. Chinese M J 60:141 (Aug) 1941.
140 Health (Australia) 15:15 140 (Nov.) 1937.
141 Army M Bull No 65 1943 p 32.
142 Ann. Rep. M. Dept. Straits Settlements 1929 1935.
143 League of Nations Health Organization Intergovernmental Conference on Nutrition Geneva 1937.
144 Charvat J. Bull. Office internat. d'hyg. pub 30:591 (March) 1938.
145 Ann. Rep. Internat. Health Div. Rockefeller Foundation 1941.
146 Messeri and Heimann¹⁵⁵
146 Langfeldt E. Nord med tidsskr 15:244 1938.
147 Mezincesco M D. Ztschr f Vitaminforsch 11:376 1941.

148 Robinson W D, Janner J H and Grande Covian. Francisco J Nutrition 2:4 557 (June) 1942.
149 Gander and others¹⁵⁷ Barrelet¹⁵³
150 Wagner K H. Deutsche med Wchnschr 66:1232 1941.
151 Björk O. Nord. Med. 1:740-743 1939. abstr. Chem. Zentrallbl 8:1224 1941.
152 Minot A S, Dodd Katharine, Keller Margaret and Frank Helen. J Pediatr 16:717 (June) 1940.
153 Quiroz J D. Bull. de la Oficina Sanitaria Panamericana 78:55 1939.
154 Dry T J. Proc. Staff Meet. Mayo Clin 7:309 (May 25) 1932.
155 Messeri F M and Heimann F. Rev. d'hyg. 60:29 (Jan) 1938.

winter diet to furnish vitamin C. Among 500 children seen in a pediatric clinic in Tennessee in 1940, 50 per cent had low blood levels for vitamin C.¹⁵⁶ A study among hospital cases in Uruguay¹⁵⁷ in 1939 revealed an incidence of 15.5 per cent among the civilian popu-

among a group of 100 civilians¹⁷⁸ studied in 1942) 38 per cent demonstrated low blood levels.

Less alarming figures have been reported from similar surveys utilizing blood level determination among selected groups. In Prague,¹⁶⁰ in 1939, 10 per cent

TABLE 9—Occurrence of Vitamin K Deficiency

Area, Year	Condition	Incidence or Number of Cases	Comment	References
United States 1941	Hemorrhagic disease of newborn	Untreated, 11 of 25 K to mother during labor; 10 of 53 K to mother before labor; 3 of 23		Pratt, L. G., McKeown, H. S., and Pollard, W. L. <i>Am J Obst & Gynec</i> 42:836, 1941
United States 1941	Retinal hemorrhage	Untreated, 50 of 223, K to mother during labor; 34 of 223 K to mother before labor; 2 of 50		Maumenee, Hellman and Shettles ^{161a}
United States 1941	Hemorrhagic disease of newborn	Untreated, expectancy 5 cases; treated, 0 of 550		Juvert, C. T., and Maciel, C. <i>Am J Obst & Gynec</i> 42:415, 1941
United States 1940	Death from hemorrhagic disease of newborn	Untreated, 2.3%; treated, 0.25%	Deaths (total) 4.1% and 1.5% respectively	Hellman, L. M., Shettles, L. B., and Eastman, N. J. <i>Am J Obst & Gynec</i> 40:844, 1940
United States 1940	Hemorrhage or birth injury	Untreated, 23 of 210 treated; 4 of 400		Waddell and Lawson ^{161a}
United States 1940	Prothrombin deficiency	111 of 189		
United States 1940	Hemorrhagic disease of newborn	22 cases	Responded to K	Poncher, H. G. and Kato, Katsuji. <i>J A M A</i> 115:14, 1940
United States 1939	Hemorrhagic disease of newborn	7 cases	Responded to K	Waddell, W. W. Jr. and Guerry, DuPont. <i>J Pediatr</i> 15:802, 1939
United States 1939	Hemorrhagic disease of newborn	1 case	Decreased clotting time in 10 of 10	Waddell, W. W. Jr. and Guerry, DuPont. <i>J A M A</i> 112:2250, 1939
United States 1940	Hypoprothrombinemia	41 cases	Treated successfully; 5 with liver damage did not respond	Andrus, P. M. and Lord, T. W., Jr. <i>Ann Surg</i> 112:783, 1940
United States 1940	Hypoprothrombinemia	39 cases	Treated successfully; 6 with liver damage did not respond	Weir, J. F., Butt, H. R., and Snell, A. M. <i>Am J Digest Dis</i> 7:485, 1940
United States 1940	Hypoprothrombinemia	20 cases	All except those with liver damage treated successfully; 7 with hemorrhagic bleeding stopped	Norcross, J. W. and McFarland, M. D. <i>J A M A</i> 115:2150, 1940
United States 1940	Hypoprothrombinemia	28 cases	Treated successfully; 18 did not respond; many of these had liver damage	Pohle, F. J., and Stewart, T. K. <i>J Clin Investigation</i> 19:365, 1940
United States 1940	Hypoprothrombinemia	17 cases	Treated successfully; 3 with liver damage did not respond	Butt, H. R., Snell, A. M., Osterburg, A. E., and Bollman, J. L. <i>Proc Staff Meet Mayo Clin</i> 15:69, 1940
United States 1940	Hypoprothrombinemia	10 cases	9 responded; 3 of these had bleeding which stopped	Rhoads, J. E. and Fliegelman, M. T. <i>J A M A</i> 114:400, 1940
United States 1939	Hypoprothrombinemia in obstructive jaundice	5 cases	Responded to K	Stewart, J. D., and Rourke, G. M. <i>New England J Med</i> 221:403, 1939
United States 1939	Hypoprothrombinemia in obstructive jaundice	12 cases	Responded to K	Stewart, J. D. <i>Ann Surg</i> 109:688, 1939
United States 1940	Hemorrhage after operation	4 cases	Responded to K	
United States 1940	Bleeding in obstructive jaundice	11 cases	Responded to K; 5 patients with liver damage did not respond	Aggeler, P. M., Lucia, S. P., and Goldman, L. <i>Proc Soc Exper Biol & Med</i> 43:689, 1940
Scotland 1940	Intercranial hemorrhage	1 to 2%	85% die in first 3 days; 25% of survivors have motor or mental involvement	Macpherson, A. J. S., McCallum, E., and Haultain, W. F. T. <i>Brit M J</i> 1:839, 1940
	Hypoprothrombinemia	67 cases	K raised above danger point (to 30 babies and to 31 mothers during or before labor)	
Scotland 1939	Hemorrhagic tendency with jaundice	4 cases	Responded to K	Illingsworth, C. F. W. <i>Lancet</i> 1:1031, 1939
Denmark 1941	Hemorrhagic disease of newborn	65 cases	Responded to K	Dam, H., and Plum, P. <i>Monatsschr f Kinderh</i> 57:55, 1941
Denmark 1940	Hemorrhagic disease of newborn	31 cases	Responded to K	Plum, P., and Dam, H. <i>Ugesk f Leger</i> 102:1029, 1940
Denmark 1939	Hemorrhagic disease of newborn	4 cases	2 responded to K	Dam, H., Tage-Hansen, E., and Plum, P. <i>Ugesk f Leger</i> 101:890, 1939
Sweden 1940	Bleeding in obstructive jaundice	4 cases	Responded to K	Hedenstedt, S. <i>Nord Med</i> 6:789, 1940
Canada 1940	Bleeding in obstructive jaundice	17 cases	Responded to K	Townsend, S. R., and Mills, F. S. <i>Canad M A J</i> 41:341, 1940
Canada 1939	Bleeding in obstructive jaundice	10 cases	9 responded to K	Townsend, S. R., and Mills, F. S. <i>Canad M A J</i> 41:111, 1939
Germany 1939	Bleeding in obstructive jaundice	1 case	Responded to K	Koller, F., and Wahrmann, F. <i>Klin Wchnschr</i> 18:1038, 1939

lation and 3.4 per cent among the soldiers. In 1940 among a group of 94 Swiss soldiers¹⁶⁷ whose enlistment period was in excess of nine months, 57 per cent had blood determinations at deficiency levels, while

of 180 school children between the ages of 12 and 20 years had low blood levels. In New York City,⁶ in 1941, 6.7 per cent of a selected group were deficient. In South Carolina,¹⁶⁰ in 1942, 1.5 per cent of 400 people

156 Milam, D. F. *Am J Pub Health* 32:406 (April) 1942
157 Gander and others. *Ztschr f Vitamin* 11:121-128, 1941

158 Barrelet, P. *Schweiz med Wchnschr* 72:796 (July 18) 1942
159 Bitch, L. *Rev franç de pédiat* 15:188, 1939

Avitaminosis K appears to have been studied most extensively in the United States, in Denmark and in the British Isles. Very little information is available from other sections of the world. By far the highest incidence is in the newborn, other cases are negligible in comparison. Estimates of prothrombin deficiency in very young infants range as high as 60 per cent,^{161a} and an incidence of retinal hemorrhage as high as 25 per cent has been observed.^{161b}

NUTRITIONAL ANEMIA

The term "nutritional anemia" is restricted to the anemia resulting from insufficient dietary intake of iron. Anemias indirectly arising from other nutritional deficiency such as that which accompanies scurvy, pellagra or hypoproteinemias are not included here.

Nutritional anemia cannot be regarded as a clearly defined clinical entity. Standards of optimal hemoglobin concentration and optimal red blood cell count for persons of each age, sex or race are not generally agreed on.⁶ Moreover, certain normal physiologic functions such as pregnancy, pubescence, catamenia and the menopause materially alter the blood picture in so complex a manner that the definition of the norm for these special states is uncertain.¹⁶² The situation is further complicated by the fact that other causes of anemia such as chronic latent blood loss, local infection or tuberculosis may be readily overlooked in large scale investigations.

The clinical features of nutritional anemia are likewise not very clearcut. The dietary history affords the most pertinent positive information. In evaluating the dietary history, local variations in the iron content of foods must be kept in mind. The symptoms are somewhat generalized and include lack of energy, headache, vertigo, dyspnea and palpitations. In children behavior difficulties such as failure to concentrate and physical indolence are observed. The condition is commonly accompanied by no distinct symptoms whatever.

Physical findings include pallor, loss of skin turgor, suboptimal weight and reduced muscle tone. In advanced cases a soft apical systolic murmur may be heard and the pulse is rapid and of poor quality.¹⁶³

Most often, however, the diagnosis rests solely on laboratory findings. Reznikoff states that, "hematologically, the striking features of iron deficiency from any cause are the relatively marked decrease of hemoglobin compared to the red blood cell reduction and the small size of the cells, giving a low volume index, usually less than 0.75."¹⁶⁴

Recent studies have been concerned both with the development of adequate diagnostic standards and with the determination of the prevalence and distribution of the deficiency. Despite numerous fairly elaborate studies, only a beginning has been made. In table 10 there have been summarized those studies of the past decade which afford epidemiologic data concerning nutritional anemia. The groups studied vary widely and include preschool children, school children, pregnant women and general populations. Standards for

the determination of deficiency are frequently not stated and the stated standards vary widely from survey to survey. Moreover, the inherent error in the several laboratory procedures employed in the respective surveys is not at all comparable, although in all instances it is admittedly great. For these reasons each of the recorded studies must be regarded as a distinct source of information bearing on the special group, and no general statistical summary is warranted.

Disregarding these limitations, we may observe from isolated studies that at least in certain communities nutritional anemia should be given close consideration. Thus, about 50 per cent of 2,400 children studied in Pennsylvania in 1939 were anemic. In Michigan 26.6 per cent of 158 pregnant women were found anemic, and in Boston 16 per cent of adults studied were anemic. In New York City 72 per cent of 325 pregnant women were anemic. In Florida in 1939 more than 50 per cent of 620 school children were found to have subnormal hemoglobin. In Scotland, in 1939, 32 per cent of children and 45 per cent of adults examined were anemic, and in Madrid, Spain, in 1941, 16 to 18 per cent of 561 persons had low hemoglobin (table 10).

Accordingly, Jolliffe, McLester and Sherman¹⁶² state that combining such data indicates "anemia in from 15 to 85 per cent of children, 36 to 30 per cent of adults and 9 to 72 per cent in pregnancy." Obviously the wide range of these estimates indicates that they are not particularly informative of the actual occurrence of nutritional anemia in the world population.

Such diverse and yet limited information affords too spotty a view of the character and scope of the problem of nutritional anemia to constitute a basis for sound public health practice. Nevertheless it is clear that where the condition has been searched for many cases have been found. In all probability nutritional anemia is of widespread, worldwide occurrence, and further extensive observations should be carried out in order to set up suitable public health and dietary practices to prevent this condition.

THE PROBLEM OF ADEQUATE NUTRITION

International attention was first given to nutrition and health by the League of Nations beginning in 1925 and culminating in the reports of the Technical Commission on Nutrition¹⁶⁵ and the Mixed Committee on Nutrition in 1937.¹⁶⁶ It is obvious that as measured by any modern standard of adequate nutrition much of the world's population is subsisting on inadequate food. In terms of adequate food for every one, no food surplus has ever existed. In terms of dietary adequacy the world has never had enough to eat. So-called overproduction and apparent surpluses have in reality been failures to secure adequate distribution. The recent United Nations Conference on Food and Agriculture¹⁶⁷ recognized that national and international agricultural policies must be directed toward obtaining a food supply adequate for health.

Although poverty is the principal cause of malnutrition, general economic improvement will not give every one an adequate diet. Faulty food distribution is the

161a Waddell, W. W. Jr., and Lawson, G. M. Hemorrhagic Diathesis of the Newborn, *J. A. M. A.* **115**: 1416 (Oct. 26) 1940.

161b Maumenee, A. E., Hellman, L. M., and Shettles, L. B. Factors Influencing Plasma Prothrombin in the Newborn Infant, *Bull. Johns Hopkins Hosp.* **68**: 158 (Feb.) 1941.

162 Jolliffe, Norman, McLester, J. S., and Sherman, H. C. The Prevalence of Malnutrition, *J. A. M. A.* **118**: 944 (March 21) 1942.

163 Osler, S. *Textbook of Medicine*, ed. 14, H. S. Christian, editor, New York, D. Appleton & Co., 1942.

164 Cecil, R. L. *A Textbook of Medicine*, ed. 5, Philadelphia, W. B. Saunders Company, 1942, p. 1071.

165 *Physiological Bases of Nutrition*, League of Nations Publications II, Economic and Financial, 1936, II, B, 4.

166 *Interim Report of the Mixed Committee on the Problem of Nutrition*, League of Nations Publications II, Economic and Financial, 1936, II, B, 3.

167 *United Nations Conference on Food and Agriculture. Final Act and Section Reports*, Dept. of State Publication 1948, Conference Series 52, 1943. Parran, Thomas. *A Blueprint for the Conquest of Hunger*, *Pub. Health Rep.* **58**: 893 (June 11) 1943. Editorial, *Am. J. Pub. Health* **33**: 847, 1943.

most important contributory factor, and ignorance of the rules of good diet plus indifference to the consequences and bad dietary habits are the contributory underlying causes

Great Britain has shown that a national food policy based on nutritional adequacy can control malnutrition. Close control of food production, importation and prices together with strict rationing and with a food distribution system planned with the assistance of nutrition experts with the goal of adequacy instead of profit has assured an individual availability of foods with the result that in spite of poorer living conditions incident to the war, the infant mortality in 1942 was the lowest on record and health has been maintained at a high level with a decreased general death rate and a negligible incidence of deficiency diseases.

From the point of view of preventive medicine the problem of adequate nutrition is so different from other health problems that it requires a new approach. Its ramifications extend far into our whole economic structure. Such diverse problems as the control of crop production, farm machinery, manpower food distribution, transportation, food preservation and processing, storage and food preparation as well as nutrition education and the diagnosis, prevention and treatment of deficiency diseases are all involved. It is obvious that problems of this range and magnitude cannot be solved by physicians, health officers or any other one agency alone. The first essential is close cooperation and intimate relations among a number of agencies, including physicians and health officers.

A number of official and voluntary agencies in this country have been working on certain aspects of our nutrition problem for many years with little participation by physicians except from some health officers. The home economics and agriculture teachers in our high schools and colleges, the Agricultural Extension Service, the American Red Cross, the Children's Bureau of the Department of Labor and numerous other organizations have had continuing programs for a long time.

Many of our state health departments have established and maintained a small nutrition service at the state level with the assistance of the Children's Bureau. The attention here during peacetime was focused primarily on problems of maternal and child health, and an excellent start has been made. However, there are other population groups which also may be regarded as especially vulnerable from a nutritional point of view and to whom it is essential that attention also be given especially in wartime, for example school children, adolescents and workers in essential industries. In order to deal more effectively with these varied problems the regular nutrition activities of various government and voluntary agencies have been intensified, expanded and coordinated. A first meeting of representatives of these agencies was held in 1940, and in May 1941 President Roosevelt called the First National Nutritional Conference in Washington.¹⁶⁸

The National Nutrition Program was based on the recommendations of this conference, and coordination was obtained through the Nutrition Division of the Office of Defense Health and Welfare Services. These activities have now been incorporated into the Nutrition and Food Conservation Branch of the War Food Administration.

Regional nutritionists carry out the functions of this branch from the Food Distribution Administrative regional offices. On invitation these nutritionists work with state and local nutrition committees in planning and developing nutrition programs and projects. The most important accomplishment of this office has been the successful coordination of the nutrition program of various agencies, recognizing the place of each but centering attention on the common objective. It has shown that a coordinated program of this magnitude can be made to work in this country.

Nutrition committees have been formed in every state and in Hawaii and also are working on local nutrition problems in many counties, cities and local communities. In many instances there has been little or no participation by physicians or health officers in spite of invitations to medical societies and health departments to send representatives. The work of these committees has consisted mainly in the organization of nutrition classes, preparation and distribution of educational material, food demonstrations, victory gardens and home food preservation, and it is expected that they will play an increasingly important role in war food programs through school lunch activities and nutrition in industry subcommittees. If properly developed they should become the local body through which all the food and nutrition problems of the community are attacked.

The ultimate purpose of a civilian wartime food program is to assure "enough to eat" to every one, so that the war may be fought with the utmost efficiency. The phrase "enough to eat" in its proper use must mean not only enough in quantity but also enough of all essential dietary elements. This means that the entire program must be planned on a sound technical nutritional basis with adequate control of distribution together with price control of those constituents of the nation's food supply necessary to secure dietary adequacy.

Failure to recognize the necessity for basing the control on nutritional adequacy, or half-way measures of control, defeat the whole purpose of the program and are worse than no control in that they create a false sense of dietary security, and a ration coupon becomes a symbol of unobtainable food rather than a guaranty of a fair share of an item necessary for the maintenance of health.

It is also essential that any such program take into account the greater physiologic needs of the "vulnerable groups" in the population, among the most important of these groups during war being the workers in war industries. Differential rationing by allotting more ration coupons to such groups would threaten the whole rationing structure because of difficulties in administration and the great difficulty in assessing the actual needs of the individual based on his special requirements. In general the most practicable solution is to develop feeding facilities within each industrial plant which can supply an adequate midshift meal to every employee without requiring ration coupons. In a few industries operating under special conditions of isolation from the usual food supply it may be necessary to supply extra food to the entire establishment. Here the allocation is made to the group and not to the individual. Rare exceptions, such as sheep herders, may require special allocations.

The aspect of industrial nutrition which involves the community can be attacked by the local nutrition committee. Infant feeding should be regarded as one aspect of a properly developed industrial hygiene program. It should be approached through the plant medical officer or safety director after the plant management has agreed to the program.

At the federal level the War Food Administration works closely with the Industrial Hygiene Division of the National Institute of Health of the United States Public Health Service. At the state level, when state health departments have industrial hygiene officers they should be one of the points of contact with the plant, using the advice and assistance of the local and state nutrition committee. Because of the scope and importance of the industrial nutrition problem the War Food Administration has appointed regional nutrition representatives to work with state and local committees as well as health officers and plant officials.

On request from industrial plants, industrial nutritionists assist in planning employee feeding and nutri-

to include an effort to attain the best possible level of health which is unknown in the absence of good nutrition.

The fact that malnutrition and deficiency diseases usually appear insignificant in mortality and morbidity tables does not reflect the real importance of nutrition in our national health. Although good nutrition does not guarantee good health, poor nutrition can and often does contribute to mortality from other primary causes, while optimum nutrition can contribute to optimum health.

The health officer and physician can help determine the prevalence of malnutrition and relate nutrition problems to other public health and medical problems. Some of the more important activities for health departments in developing this field in collaborating with existing programs were recently proposed by Sebrell and Wilkins¹⁶⁹ as follows:

STATE HEALTH DEPARTMENT ACTIVITIES

1 Collect information and do appraisals on the incidence and types of deficiency diseases and on food habits in geographical areas and population groups, especially children, pregnant and lactating women and industrial workers. Even small samplings are of value in pointing the way to more comprehensive appraisals.

2 Offer assistance in the diagnosis of nutritional deficiencies. Here is a health department service which is in line with sound public health principles and which will strengthen the work of other agencies in this field. At the same time the efforts of other agencies will contribute greatly to creating a demand for this type of service.

3 Prepare and distribute simple attractive literature dealing with state nutrition problems. Such literature should be prepared with a full knowledge of all other nutrition literature being used by other agencies in order that duplication and conflicting viewpoints may be avoided.

4 Cooperate actively with other agencies dealing with different aspects of the nutrition problem. Offer the specialized services of the health department to other agencies to help them in dealing with their particular phases of nutrition.

5 Take an active part in the work of the state nutrition committee.

6 Offer information, consultation, guidance and encouragement to local health departments in developing local nutrition programs and in cooperating with the local nutrition committees.

7 Promote staff education in nutrition, including facilities for professional education in public health nutrition, and education of county and city health department personnel in nutrition activities.

8 Assist in sponsoring conferences and refresher courses in nutrition and related fields for public health and school personnel. During the past three summers nine such cooperatively sponsored six week conferences have been held in one state. Similar projects have been successfully carried out in several other states.

9 Active participation of nutritionists in the public health nursing and dental hygiene program, in well child clinics, in school health programs and in other activities of the maternal and child health division.

10 Include nutrition in the industrial hygiene program not only by nutrition education in the plant, but also by improving plant feeding facilities and the nutritional quality of the meals served.

11 Cooperate with and assist the state food distribution administrator in locating and meeting local food problems.

12 Take an interest in school lunch programs. The United States Public Health Service can consider requests for nutritionists for these programs under title VI funds if recommended.

TABLE 11—Necessary Foods

- | |
|---|
| 1 Green and yellow vegetables some raw, some cooked, frozen or canned |
| 2 Oranges, tomatoes, grapefruit or raw cabbage or salad greens |
| 3 Potatoes and other vegetables and fruits raw, dried, cooked, frozen or canned |
| 4 Milk and milk products, fluid evaporated, dried milk or cheese |
| 5 Meat, poultry, fish or eggs or dried beans, peas, nuts or peanut butter |
| 6 Bread, flour and cereals, whole grain or enriched or restored |
| 7 Butter and fortified margarine (with added vitamin A) 'Eat some food from each group every day' |
| "In addition to the basic 7, eat any other foods you want" |

Further instructions in order to cover possible wartime shortages are as follows:

If scarce in	Use more from
Group 2	Group 1, 3
Group 4	Group 1, 5, 6
Group 5 (meats)	Group 4, 5 (eggs)
Group 7	Group 1, 4

tion education programs and in handling applications for essential equipment and food. They also work with labor groups in promoting better eating habits.

In many states industrial nutrition subcommittees have been organized under the state nutrition committee. The representative of the health department should work with these subcommittees, which include industrial physicians, caterers, representatives of labor, plant management and other interested groups.

Nutrition committees throughout the country are constantly striving to improve the public knowledge of nutrition and to develop better food habits. Food shortages make these activities more important than ever. This education is based on food groups designed to yield nutritional adequacy with considerable latitude in the choice of food items. The recommendation is a type diet which for application requires local adaptation to specific items. The necessary foods are listed in seven groups (table 11).

Physicians and health officers should assist in the promotion of sound nutrition education as well as in promoting good food programs designed to improve nutrition. The health officer has both an opportunity and an obligation here in preventive medicine which cannot be performed as well by any other group. The concept of the prevention of disease must be enlarged

169 Sebrell W. H., and Wilkins Walter. The Role of the Health Department in the National Nutrition Program, Pub. Health Rep. 58, 803 (May 21) 1943.

and requested through local and state health departments. Under rationing we should give more attention than ever to the adequacy of the meals our children get at school.

LOCAL HEALTH DEPARTMENT ACTIVITIES

- 1 Learn what other agencies have done and are doing within the area
- 2 Affiliate with the local nutrition committee
- 3 Study the nutritional status and needs of the area from medical and public health angles and help orient other agencies in this regard
- 4 Distribute and interpret nutrition teaching material, especially material which deals primarily with local problems
- 5 Have a planned program for staff education in nutrition within the department or in cooperation with other agencies
- 6 Exert a stabilizing influence and interpret sound nutrition practices to the public, avoiding fads and extremes
- 7 Interpret local nutritional conditions to the public through talks, newspaper articles, radio programs and so on
- 8 Make an effort to increase the interest of local medical and dental professions in local nutrition problems and practical solutions
- 9 Develop nutrition educational facilities for patients who attend public health clinics. In some places it may be advisable to establish clinics to deal primarily with nutrition problems
- 10 Develop and maintain a movie, film strip and slide library on nutrition and related subjects
- 11 Encourage public eating places to serve food of good nutritional value and to prepare their foods in such a way as to conserve vitamins and minerals. This might be started as a consultation service
- 12 Encourage civic clubs to sponsor programs which, either directly or indirectly, will improve the nutrition status of groups within the community
- 13 Advise and sponsor feeding facilities in connection with child day care programs
- 14 Stress nutrition in school health programs
 - (a) Cooperate with teachers, parent-teachers associations and lunchroom managers in improving school lunches
 - (b) Sponsor cooperative school lunch programs
 - (c) Encourage the use of simple, wholesome, home prepared foods in lunchboxes rather than the use of store bought snacks
 - (d) Watch for and stress nutritional deficiencies in physical examination of school and preschool children.
 - (e) When practical, conduct or sponsor demonstrations with school children showing results of improved nutrition (properly integrated with other health habits)
 - (f) Sponsor "sampling surveys" of school children for nutritional status. If possible, get local medical and dental societies to cooperate

From a national point of view the state of nutrition of a considerable part of the population of this country is unsatisfactory and has been so for many years. Whether even this present state of nutrition can be maintained in the face of the present food situation depends on the efficiency with which we produce, distribute and utilize our food supplies. The signs and symptoms of malnutrition are often overlooked or attributed to other causes. Gross deficiency disease still exists and the relationship of nutrition to other health problems is not common knowledge as it should be. Poor methods of using, preserving and preparing foods both in homes and in public eating places are responsible for tremendous losses in food values. Even in the face of food shortages there is as yet little tendency to conserve and use every bit of edible food. The uses of alternate foods when shortages exist is little appreciated. A shortage in beef results in a public clamor to satisfy the palate although physiologic needs can be met easily from other food sources without difficulty.

There is probably more public interest in nutrition and food today than ever before. Physicians and health

officers can play an enormously important part in the national effort to improve nutrition by guiding this interest along sound lines. Too often the busy physician finds it easier to prescribe a vitamin pill than to investigate food habits and recommend dietary changes. Health officers need to become acquainted with the nutrition work being done by other agencies and have their staff members take their proper place in the nutrition program after they have obtained a background of knowledge of the work being done by other organizations.

We have an unparalleled opportunity in the field of preventive medicine. If agriculture is to be based on the nutritional needs of the population, health and medical authorities should determine what those needs are. Satisfactory nutrition depends on health and agricultural authorities working together. Agriculture up to now has had to assume the major portion of the burden of solving our nutritional problems. It is past time for medical and health authorities to assume their share of the responsibility.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
AUSTIN E SMITH M.D. Secretary

NOMENCLATURE OF ENDOCRINE PREPARATIONS

Considerable progress has been made in the last few years on the development of potent endocrine preparations for clinical purposes. The standardization of these products has been significantly improved of late and promises to be established on a satisfactory basis. Nevertheless there is still confusion in the minds of physicians regarding the identity of many of these products, their sources and potencies. One of the factors most responsible for this unsettled state is the retention of proprietary terms for these products. The Council has made several appeals for a scientific nomenclature and has taken numerous steps in this direction so that therapy with endocrine preparations would not necessitate an intimate knowledge of the detailed lists of products. In the 1942 edition of *Glandular Physiology and Therapy* the chapter on 'Present Status of Commercial Endocrine Preparations' discussed the therapeutic value of the various endocrine preparations together with a listing of the products accepted by the Council. No attempt was made however to note the proprietary names of other than products accepted by the Council except by their scientific terminology. The Council now considers it advisable to furnish physicians with the names and synonyms of these endocrine preparations which have been shown to have therapeutic effects. The present report was prepared therefore in order to enable physicians to clarify in their minds the nature of the various products both proprietary and nonproprietary together with the synonyms basis of standardization and sources. The Council reserves the privilege of omitting from this list those preparations which are acknowledged by authorities to be of little value in endocrine therapy because of their unscientific nature, lack of sufficient potency or other evidence indicating little rationale for their use. The reader is referred to an article by W. A. Schonfeld (*New York State J Med* 42:1538 [Aug 15] 1942) who in writing a somewhat similar article, has included preparations which the Council does not see fit to list for the reasons mentioned. In the present report the reader is advised that preparations are being omitted which are marketed by firms which have no products accepted by the Council in order to eliminate an excessive amount of effort and time in examining these multitudinous products. Such omissions do not necessarily imply a disapproval of certain of these products. The fact that

products are included in the appended list is, on the other hand, no indication that the Council approves of all of them. As a matter of fact, some of these products have been rejected by the Council. The reader is referred to chapter XXXI of *Glandular Physiology and Therapy* (THE JOURNAL, Oct 4, 1941, p 1175) for brief discussions on the actions and uses of some of the preparations described in the following list.

[NOTE—Products marked with an asterisk have been accepted by the Council for inclusion in New and Nonofficial Remedies.]

THYROID GLAND

DESICCATED THYROID

Source: Obtained from domesticated animals that are used for food by man. Assay: Chemical—U S P standard requires from 0.17% to 0.23% of iodine in thyroid combination.

PRODUCT AND FIRM

- *Thyroid U S P: Marketed by eight or more firms.
- Thyroid Emulets—iodine 0.3% assayed 50% above U S P: Parke, Davis.
- Thyroid Tabloid—iodine 0.4% (net wt) 5 grains equal 2 grains U S P: Burroughs Wellcome.
- Note: Avoid unstandardized products.

THYROXIN (Natural)

Source: Active principle obtained from thyroid gland. Assay: Chemical—U S P requires not less than 64% iodine in thyroxine molecule.

PRODUCT AND FIRM

- *Thyroxin Crystals (intravenous): Squibb.

THYROXIN (Synthetic)

PRODUCT AND FIRM

- *Synthetic Thyroxin (intravenous and oral): Hoffmann-La Roche.

THYROXIN FRACTION

Source: Disodium salt of thyroxin. Assay: Chemical—contains stated weight of thyroxin.

PRODUCT AND FIRM

- *Tablets Thyroxin Fraction (oral): Squibb.

PARATHYROID HORMONE¹

PARATHORMONE

Source: Animal parathyroid gland. Assay: U S P units.

PRODUCT AND FIRM

- *Parathyroid Extract: Lilly.
- *Parathyroid Hormone: Squibb.
- *Paroidin: Parke, Davis.

ADRENAL CORTEX

ADRENAL CORTEX EXTRACT

Source: Adrenal gland of animals. Assay: Biologic units (1 cc of extract is derived from 40 Gm of fresh gland).

PRODUCT AND FIRM

- *Adrenal Cortex Extract: Upjohn.
- Adrenal Cortex Extract: Wilson Laboratories.
- Cortin: Roche-Organon.
- Eschatin: Parke, Davis.

DESOXYCORTICOSTERONE ACETATE

Source: Synthetic. Assay: Weight.

PRODUCT AND FIRM

- Cortate: Schering.
- Doca: Roche-Organon.
- Percorten: Ciba.

ADRENAL MEDULLA

EPINEPHRINE

Source: Active principle of adrenal medulla, natural or synthetic (levorotatory). Assay: Chemical—U S P standards.

PRODUCT AND FIRM

(Prepared for hypodermic, intravenous and oral medication.)

- *Suprarenalin: Armour.
- *Adrenalin: Parke, Davis.
- *Epinephrine: Upjohn, Wilson and other firms.
- *Suprarenin: Winthrop.

SOLUTION OF EPINEPHRINE HYDROCHLORIDE U S P 1,000

Composition: Epinephrine in distilled H₂O and hydrochloric acid—1,000.

*Products: Marketed by nine or more firms.

SOLUTION OF EPINEPHRINE HYDROCHLORIDE U S P 100

Composition: 1 part of epinephrine hydrochloride U S P in 100 parts of isotonic solution of sodium chloride.

¹ See also Activated Sterols. Source: Ergosterol, irradiated product; Viosterol in Oil. See list in N N R Hytakerol (dihydrotachysterol, formerly known as A T 10), Winthrop.

PRODUCT AND FIRM

- *Suprarenin Solution 1 100: Armour.
- *Solution of Adrenalin Chloride 1 100: Parke, Davis.

SUSPENSION OF EPINEPHRINE IN OIL 1 500

Composition: A 0.2% suspension, containing 1 part epinephrine U S P to 500 parts vegetable oil.

PRODUCT AND FIRM

- *Epinephrine in Oil 1 500: Endo Products, Lakeside, Smith Dorsey, Squibb.
- *Adrenalin in Oil 1 500: Parke, Davis.

PANCREAS

INSULIN (Crystalline)

Source: Beef and pork pancreas. Assay: Biologic—solution of zinc insulin crystals standardized as follows: 1 mg contains 22 insulin units as defined by Insulin Committee of University of Toronto.

PRODUCT AND FIRM

- *Insulin, U 20, U 40, U 100: Sharp & Dohme.
- *Insulin, U 20, U 40, U 80, U 100: Squibb.
- *Iletin, U 20, U 40, U 80, U 100: Lilly.

PROTAMINE ZINC INSULIN

Composition: A suspension of the precipitate of insulin, protamine and zinc in buffered solution. Assay: As above, with additional chemical assay.

PRODUCT AND FIRM

- *Protamine Zinc Insulin U 40, U 80: Sharp & Dohme, Squibb.
- *Protamine Zinc and Iletin, U 40, U 80: Lilly.
- Note: Standard label colors: U 20, yellow; U 40, red; U 80, green; U 100, orange.

ESTROGENS (CRYSTALLINE)

ESTRONE—Theelin—Ketoxyhydroxyestrin

Source: Urine of stallions and pregnant mares. Assay: International standard (0.0001 mg equals 1 international unit).

PRODUCT AND FIRM

- *Estrone in Oil: Abbott, Lilly.
- *Estrone Suppositories: Abbott, Lilly.
- Estrone Aqueous Suspension: Abbott.
- *Theelin in Oil: Parke, Davis.
- *Theelin Suppositories: Parke, Davis.
- Theelin Aqueous Suspension: Parke, Davis.

ESTRIOL—Theelol—Trihydroxyestrin

Source: Urine of pregnant women. Assay: Weight.

PRODUCT AND FIRM

- *Estriol Capsules: Abbott, Lilly.
- *Theelol Capsules: Parke, Davis.

ESTRADIOL—Dihydroxyestrin

Source: Chemical modification of estrone from the urine of stallions and pregnant mares. Assay: Weight or biologic units.

PRODUCT AND FIRM

- Dimenformon Ointment: Roche-Organon.
- Dimenformon Tablets: Roche-Organon.
- Ovocycin Ointment: Ciba.
- Ovocycin Suppositories: Ciba.
- Ovocycin Tablets: Ciba.
- Progynon DH Ointment: Schering.
- Progynon DH Suppositories: Schering.
- Progynon DH Tablets: Schering.

ESTRADIOL BENZOATE

Source: Esterification of estradiol. Assay: Weight or biologic units.

PRODUCT AND FIRM

- Ben Ovocycin in Oil: Ciba.
- Dimenformon Benzoate in Oil: Roche-Organon.
- Progynon B in Oil: Schering.

ESTRADIOL DIPROPIONATE

Assay: Weight.

PRODUCT AND FIRM

- Di Ovocycin in Oil: Ciba.
- Progynon DP in Oil: Schering.

ESTROGENS (NONCRYSTALLINE)

ESTROGENS—Estrogenic Substances—Essentially Estrone

Source: Urine of stallions or pregnant mares. Assay: In equivalents of international units.

PRODUCT AND FIRM

- *Amniotin: Squibb.
- *Amniotin Capsules: Squibb.
- *Amniotin Suppositories: Squibb.
- Estrogenic Hormone in Oil (from human placenta): National Drug.
- Estrogenic Hormone in Oil U S Standard Products Co.
- *Estrogenic Substance: Sharp & Dohme.
- Estrogenic Substance Solution: Breon.
- *Solution of Estrogens: Lakeside Laboratories.
- *Tablets of Estrogens: Lakeside Laboratories.
- Estromone in Oil: Endo Products.
- Estromone Ointment: Endo Products.
- Estromone Tablets: Endo Products.

Folestrin in Oil Armour
Menformon in Oil Roche Organon
Menformon Ointment Roche-Organon
Menformon Tablets Roche-Organon
Ova Estrin in Oil Hospital Liquids
*Solution of Estrogenic Substances Smith Dorsey

ESTRONE SULFATE (Essentially)

Source Urine of pregnant mares Assay Weight

PRODUCT AND FIRM

Premarin Tablets Ayerst, McKenna & Harrison

ESTRONE AND ESTRIOL GLUCURONIDE (Essentially)

Source Urine of pregnant women Assay Biologic units

PRODUCT AND FIRM

Emmenin Liquid Ayerst McKenna & Harrison
Emmenin Tablets Ayerst, McKenna & Harrison

ESTROGENS (SYNTHETIC)**DIETHYLSTILBESTROL (Stilbestrol)—4,4' dihydroxy diethyl stilbene**

Assay Weight
Marketed by numerous firms—a number are Council accepted

DIETHYLSTILBESTROL DIPROPIONATE

Assay Weight

PRODUCT AND FIRM

Estrobene Dipropionate, Ayerst McKenna & Harrison
Diethylstilbestrol Dipropionate Winthrop

HEXESTROL—Dihydro-diethylstilbestrol

Source Synthetic, Assay Weight
Marketed by The Wm. S. Merrell Co

OCTOFOLLIN—2,4 di-(p-hydroxyphenyl) 3 ethyl hexane

Assay Weight.

PRODUCT AND FIRM

Octofollin Schieffelin

PROGESTINS**SYNTHETIC PROGESTERONE (CRYSTALLINE)**

Source Synthesized from stigmasterol Assay Weight or international standard (1 mg equals 1 international unit)

PRODUCT AND FIRM

Lutoclyn in Oil Ciba
Progesterone in Oil Armour
Progestin in Oil Roche Organon
Prolutin in Oil Schering
Nalutron, Winthrop

SYNTHETIC PROGESTERONE (NONCRYSTALLINE)

Source Synthetic, Assay Biologic units converted into international units

PRODUCT AND FIRM

Progestin in Oil Abbott
Lutromone in Oil Endo Products

NATURAL PROGESTERONE (NONCRYSTALLINE)—Progestin

Source Animal ovaries Assay Biologic units converted in some instances to international units (1 Corner Allen rabbit unit equals approximately 1 international unit)

PRODUCT AND FIRM

Lipo-Lutin in Oil Parke Davis
Progesterone in Oil Breon
Progestin in Oil Lilly Upjohn

PREGNENINOLONE (Anhydro-Hydroxy Progesterone) (Oral)

Source Synthetic Assay Weight

PRODUCT AND FIRM

Luto-Cylof Tablets Ciba.
Pranone Tablets Schering
Progesterol Tablets Roche-Organon

ANDROGENS**TESTOSTERONE PROPIONATE**

Source Synthetic, Assay Weight

PRODUCT AND FIRM

Neo-Hombrcol in Oil Roche Organon
Neo-Hombrcol Ointment, Roche-Organon
Oreton F Ointment Toplicators (testosterone) Schering
Oreton in Oil Schering
Perandren in Oil Ciba
Perandren Ointment, Ciba.

METHYL TESTOSTERONE (Oral)

Source Synthesized from testosterone, Assay Weight.

PRODUCT AND FIRM

Metandren Tablets Ciba
Neo-Hombrcol (M) Ointment Roche-Organon

Neo-Hombrcol (M) Tablets Roche Organon
Oreton M Tablets Schering
Oreton M Ointment Schering

PITUITARY GLAND PRODUCTS

NOTE—All of the following products are derived from extracts of the anterior pituitary glands of domesticated animals which are used for food by man

ANTERIOR LOBE FACTORS

Adrenotropic, Lactogenic Thyrotropic Further clinical investigation is necessary before these products can be marketed with assurance of effective potency

GROWTH PROMOTING FACTOR

Assay Biologic—in terms of rat growth units which as yet have not been made uniform

PRODUCT AND FIRM

Polyasin (contains growth gonadotropic and thyrotropic principle)
Armour Ayerst, McKenna & Harrison
Phykentrone (P) Squibb
Antuitrin growth Parke Davis
Phyone Wilson
Growth Complex Armour Ayerst McKenna & Harrison.

GONADOTROPIC FACTOR

Assay Biologic—rat units which are not yet uniform

PRODUCT AND FIRM

Maturity Extract (Gonadotropic) Armour
Gonadotropic Factor Ayerst McKenna & Harrison
Gonadophysin (P) Searle
Prephysin (P) Chappel
(These products contain follicle stimulating and luteinizing hormones)

POSTERIOR LOBE (WHOLE)

Solution of Posterior Pituitary Assay Biologic—U S P standardization 0.1 cc—1 U S P posterior pituitary unit

PRODUCT AND FIRM

*Ampoules Post Pit. Sol Abbott
*Pituitary Liquid Armour
*Pituitary Extract Lilly Endo Lakeside Merrell Squibb Upjohn
U S Standard Wilson
Infundin Burroughs Wellcome

POSTERIOR PITUITARY POWDER

Assay U S P—1 mg equals 1 U S P posterior pituitary unit.

PRODUCT AND FIRM

*Desiccated Post Pit Powder U S P (used as snuff) Armour
Lilly Parke Davis

POSTERIOR PITUITARY FRACTION

Vasopressor and antidiuretic, Assay Biologic—pressor units

PRODUCT AND FIRM

*Pitressin Parke Davis
Oxytocic Assay Biologic—oxytocic units

PRODUCT AND FIRM

*Pitocin Parke Davis

EQUINE GONADOTROPIN

Source Serum of pregnant mares Assay International units (0.1 mg of international standards equals 1 international unit)

PRODUCT AND FIRM

Anteron (P) Schering
Gonadin Cutter
Gonadogen (P) in powder form—dissolved for injection Upjohn

CHORIONIC GONADOTROPIN

Source Urine or placenta of pregnant women Assay International or biologic units (0.1 mg of the international standard equals 1 international unit)

PRODUCT AND FIRM

Anterior Pituitary Like Gonadotropic Hormone Lakeside Laboratories
Anterior Pituitary Like Sex Hormone Hospital Liquids U S Standard Products
Antuitrin S Parke Davis
A P L Ayerst McKenna & Harrison
Chorionic Gonadotropin, Breon
Entomone, Endo Products
*Follutein (P) Squibb
Gestasel National Drug
Korotrin (P) Winthrop
Pranturon (P) Schering
Pregnyl (P) Roche-Organon
NOTE.—(P) In powder form—dissolved for injection.

In preparing these lists of products an extended attempt was made to keep abreast of the changes constantly being made in the marketing of these preparations. However errors may be found because of changes in products which have escaped the notice of the Council's office or because of the introduction of new agents since the preparation of this report

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new, always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, OCTOBER 9, 1943

COUNCIL STANDARDS AND MEDICAL ADVERTISING

Among the most important steps for the advancement in the United States of the practice of scientific therapy was the establishment of the Council on Pharmacy and Chemistry by the American Medical Association. The Council on Pharmacy and Chemistry was organized to protect the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with proprietary medicinal articles. A proprietary article means any chemical, drug or similar preparation used in the treatment of disease and protected against free competition as to name, product, composition or process of manufacture by secrecy, patent, copyright or other means. Notwithstanding the wholly laudable character of these functions, the creation of the Council was met by a furor of opposition from manufacturers, salesmen and the venal medical press which derived from this unsavory business profits tainted by their origin from the helpless sick and the dying. Patients must depend on their doctors for the choice of remedies. Doctors depended then on the information that came to them in the pages of medical publications and on information derived from detail men. Only too often even those pages of periodicals devoted to allegedly scientific contributions could be influenced if not purchased by the advertising that appeared in the same issue. No wonder that the establishment of a council of physicians, pharmacologists, chemists, physiologists and other qualified scientists to sift truth from falsehood and to give physicians a dependable source of information on new and nonofficial remedies should have elicited a shrieking and a moaning and a groaning from those who saw in its functioning their impending dissolution.

In almost thirty-five years that have passed since the Council came upon the scene, its results have justified the far sighted efforts of Philip Mills Jones, Frank Billings, George H. Simmons, Reid Hunt, Lafayette Mendel, Torald Sollmann and other medical and basic science leaders who gave so freely of their

time and their wisdom to its work. Again and again the medical leaders of foreign nations have written in envy of the ability of the Council to achieve the results it seeks. The subsequent creation of Councils on Foods and Nutrition and on Physical Therapy has been an indication of the approval of the House of Delegates.

In the years that have passed, more and more manufacturers of pharmaceutical preparations have given their collaboration and support to the work of the Council on Pharmacy and Chemistry. Many medical schools in their teaching of therapeutics limit themselves to the products listed in *Useful Drugs*. The book *New and Nonofficial Remedies*, a list of the preparations investigated and accepted by the Council, is increasingly used as a reference in medical schools and hospitals. The new legislation which controls foods and drugs developed from national acceptance of the principles so long maintained by the Council, no longer is it possible to launch a new remedy on the American public without previous controlled clinical testing. Such governmental control is, however, concerned only with harmlessness, and not with efficacy or advertising of the product. All the more need, therefore, for the work of the Council.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, under the direction of the Board of Trustees, limits its acceptance of advertising to products that have been accepted by the Council. All advertising for Council-accepted products is submitted to the Council on Pharmacy and Chemistry for consideration prior to publication. Most of the state medical journals and several independent medical journals also restrict their acceptances of advertising similarly. Such support is necessary to maintain the strength of the Council. Formerly some of the state medical journals were the private property of physicians, publishers or corporations that had founded them. They were conducted largely for financial gain or personal prestige. Gradually ownership changed, today in most instances these publications are the property of the state medical associations which publish them.

Outside the periodicals published by medical organizations are some which do not limit their acceptance of advertising in any easily apparent way. Their pages are replete with the announcements of remedies that have not met the criteria of scientific evaluation. Conspicuous examples of this type are the throw-away publications, such as *Medical Economics* and *Modern Medicine*, sent free to physicians because their support comes from the publication of advertising which could not gain entrance into periodicals of recognized scientific origin and merit.

The journals of two state medical societies—Illinois and New York—have been conspicuous almost from the first in their insistence on the profits to be derived from the publication of advertisements of unaccepted products. For a brief period the *New York State Journal of Medicine* agreed to abide by scientific therapy, apparently

the insistence of the business office ultimately prevailed, that periodical is today among those counted as lost before the altar of those who give their faith to scientific therapy

In 1913 the Board of Trustees of the American Medical Association, in its desire to aid and support the work of the Council on Pharmacy and Chemistry and to aid those medical periodicals which wished to enlist themselves in this righteous cause created the Cooperative Medical Advertising Bureau. Year by year the reports of the Bureau have appeared and have indicated the extent to which the Bureau has been helpful in securing advertising for the state medical journals and increasing their income. Recently there seems to have been a lessening of the careful scrutiny of advertising copy that is necessary in limiting advertising strictly to Council-accepted products. In the past month, for instance, the *Pennsylvania Medical Journal* has carried announcements of perandren and metandren, male sex hormones which have not been accepted and of prinine, a vasoconstrictor used for nasal inhalation, the *New England Journal of Medicine* carried one for ferrosate, which is a mixture used against anemia. *California and Western Medicine* in the July issue alone published advertisements for six nonaccepted products. Indeed, almost any issue of any journal may have one or more advertisements that do not meet Council Standards. The September issue of the *Southern Medical Journal* carries advertisements for more than twenty unaccepted preparations, and the Illinois and New York journals continue to be veritable directories of unestablished and unscientific therapy.

As long as any considerable part of the medical profession contributes to extending the blight of the falsely exploited proprietary medicine, the battle for scientific therapy remains difficult. In any war the most dangerous attack is the attack from the rear. The threat most difficult to meet is that from those who should be presumed to be friends. The time should long since have passed when leaders of medical organizations consent to permit the exploiters of unestablished proprietary remedies to pay the bulk of printing and publishing bills of the medical journals that are supposed to represent scientific medicine. Can the physicians of Illinois and New York and the representatives of a few states who are urging a breakdown of the Council standards believe that the business managers of their periodicals are better equipped to judge what is good in materia medica and therapeutics than is the Council on Pharmacy and Chemistry? Fortunately for American medicine, the vast majority of the profession has not accepted that point of view. The governing bodies of the medical societies of Illinois and New York and the Councils and boards of trustees of the other medical societies which are being urged by business managers to depart from the standards of the Council might well give more consideration to their responsibility to scientific medicine. The good name

and prestige of American medicine have come from its support of scientific remedies and ethical practice, from its condemnation of fraudulent and unscientific nostrums and of commercialized medicine. That good name gives us strength before the bar of public opinion where the point of view of scientific medicine needs to prevail. Let us keep the good name unsullied, its value is far above that of jewels or gold.

REACTIONS FOLLOWING SPINAL PUNCTURE

Reactions have been variously reported as occurring in 17 to 40 per cent of patients after lumbar puncture. The syndrome includes headache accompanied in severe cases by vertigo, nausea and vomiting. The most characteristic feature of this headache is the prompt relief that ensues when the patient lies down, and return of the headache when he sits up. The headache may be transitory, lasting one or two hours, moderate, terminating in one or two days, or severe, lasting six or more days. Sicard and others suggested that the headache was due to leakage of the cerebrospinal fluid into the epidural space through the defect in the dura left by the puncturing needle. The cerebrospinal fluid in a closed sac forms a pad for the brain and the spinal cord. At the base of the brain this pad acts as a cushion or water bed. MacRobert¹ argued that the cushion is absent when the patient sits up and the weight of a good part of the brain is suddenly imparted through the pons to the communicating plexus of veins. The blood about to leave the skull is impeded and is forced to turn back and travel by other crowded pathways. The resulting congestion causes a sudden rise of venous pressure. The relief of headache when the patient lies down is due to the fall of pressure when the weight is removed from the plexus of veins resting on the clivus of the occipital bone. The proponents of the leakage theory urged that the patient be confined to bed with the head lowered for twenty-four to forty-eight hours. Of the 30 patients thus treated, MacRobert records the occurrence of severe headache in 12 (40 per cent). Jacobaeus and Frumerie² and later Nelson³ found that there was a significant fall in the spinal fluid pressure between the time of the spinal puncture and the onset of the headache, suggesting reduction in the volume of the blood, probably through leakage. Nelson developed an ingenious method of plugging the puncture hole in the meninges with a strand of catgut. Of 102 cases in which this was practiced, typical postpuncture reaction developed in only 5 (4.9 per cent). Of 92 cases in which spinal

1 MacRobert R G. The Cause of Lumbar Puncture Headache. *J. A. M. A.* 70: 1350 (May 11) 1918.

2 Jacobaeus H C and Frumerie K. About the Leakage of the Spinal Fluid After Lumbar Puncture and Its Treatment. *Acta med. Scandinav.* 58: 102 1923.

3 Nelson M O. Postpuncture Headaches. A Clinical and Experimental Study of the Cause and Prevention. *Arch. Dermat. & Syph.* 21: 615 (April) 1930.

puncture was concurrently made in the usual manner, typical postpuncture reaction developed in 16 (17.4 per cent)

The leakage theory and the theory of meningeal irritation have been questioned recently by observers who have found that patients who were not put to bed after the puncture had less reaction than those who were treated by bed rest. Adler⁴ argued that a patient in the upright position should have greater leakage and therefore more severe headache. Blau⁵ reported that 21.2 per cent of patients who rested in the clinic and at home had reactions of a severe nature. Of those who left the clinic immediately but rested all day at home 21.7 per cent had severe reactions, but of those who did not rest at all only 6.4 per cent reacted severely. He concludes that the best method of preventing postpuncture reactions is the use of a fine needle and keeping the patient active for a considerable time after the puncture. Adler encouraged his patients to stay erect as long as possible after the puncture. Out of a group of 108 patients 14 (13 per cent) had a moderate or severe reaction. Of 10 men who went to bed immediately after the puncture, 7 (70 per cent) had moderate to severe reaction. Of 20 men who went to bed eight hours after the puncture, 2 (10 per cent) had slight and 2 (10 per cent) mild reactions, none had either moderate or severe reactions. Of 38 men who went to bed six hours after the puncture, only 2 (5 per cent) had severe or moderate headache. Adler therefore believes that the leakage and the meningeal irritation theories do not explain the reaction. He concludes that the cause of the headache is increased intracranial hypertension due to reaction of the choroid plexus caused by emotion. He points to the fact that Kulchar and King⁶ were able to reduce the incidence of typical postpuncture headache from 25.5 per cent to 13.5 per cent in 105 patients by the administration of 3 grains of sodium amytal by mouth before puncture. Schube and Le Drew⁷ reported a diminution in the incidence of reactions following lumbar puncture by administration of 3 grains of sodium amytal. Adler found a definite relationship between constitutional inadequacy and headache. Davenport⁸ likewise suggests that lack of physical stamina and increased suggestibility, as evidenced in the higher incidence of reactions among females and Puerto Ricans in his large series, are factors. Adler believes that the predominant factors in the causation of postpuncture headache are the constitutional make-up of the patient and psychogenic influences.

Consideration of the several theories advanced and of the contradictory facts presented suggests that further studies will be required to elucidate the mechanism of the postpuncture headache and its successful prevention.

Current Comment

THE EPIDEMIOLOGY OF SCARLET FEVER

An epidemic disease can be most satisfactorily investigated by studying the community in which the outbreak occurs throughout the preepidemic, epidemic and postepidemic periods. Such an investigation was carried out near Iasi (or Jassy) in Rumania in 1936 under the auspices of the International Health Division of the Rockefeller Foundation and the Iasi Institute of Hygiene.¹ The city in the province of Oltanea had a population of about 100,000. The field work was done in the villages surrounding the city. The area was primarily agricultural, the inhabitants living for the most part in small villages and proceeding to their farm work each day in the surrounding countryside. The studies demonstrated a rough semilogarithmic relationship between the degree of latitude and the incidence of scarlet fever in that latitude. It has been suggested that this relationship may be due both to climatic conditions and to a lower susceptibility of those races which populate the tropical regions. The studies showed that the streptococcus flora of a community during nonepidemic periods includes many different strains, almost constantly changing their relative proportions. Persons up to 20 years of age are more frequently carriers than are adults. The types of streptococci which are prominent in causing scarlet fever one year may gradually assume an insignificant role and be replaced by other types. During epidemics a single type is generally responsible but this may vary, depending on whether an outbreak occurs in a community free from scarlet fever or is superimposed on previously existent endemic disease. A type of streptococcus which causes scarlet fever may also cause other forms of streptococcal illness. The types of streptococci most frequently recovered from persons with scarlet fever and other streptococcal diseases are those most commonly found in normal carriers in the same community. This suggests that the pathogenesis may be related to the degree of distribution of the organisms throughout the community. The number of cases of scarlet fever which occur is related to the carrier rate for the epidemic type. The distribution of cases of scarlet fever by age coincides with the age distribution of positive Dick tests, except that the peak for the former is with children from 5 to 9 years old and for the latter from 1 to 4 years old. Antitoxic immunity is accepted, and, with few exceptions, Dick negative persons are immune to the clinical syndrome of scarlet fever. Antibacterial immunity may also be a factor. The principal conclusion from this study is that the amount of illness caused at any one time by a given strain of streptococcus

4 Adler, Harry. A Study of the Headaches Following Diagnostic Spinal Taps, New York State J Med **43**: 1328 (July 15) 1943.

5 Blau, Albert. Reactions Following Spinal Puncture, Urol & Cutan Rev **45**: 239 (April) 1941.

6 Kulchar, G. V., and King, A. D. Use of Sodium Amytal in Prevention of Reactions Associated with Lumbar Puncture, Arch Neurol & Psychiat **30**: 170 (July) 1933.

7 Schube, P. G., and Le Drew, Frederick. The Prevention of Reactions Due to Lumbar Spinal Puncture, New England J Med **211**: 537 (Sept. 20) 1934.

8 Davenport, K. M. Postpuncture Reactions. A Clinical Study, New York State J Med **39**: 1185 (June 15) 1939.

1 Schwentker, F. F., Janney, J. H., and Gordon, J. E. The Epidemiology of Scarlet Fever, Am J Hyg **38**: 27 (July) 1943.

is determined by three factors—the current pathogenic ability of the strain, the degree of dispersal throughout the community and the specific immune status of the population. These factors are all labile and their constant change accounts for the variations with time in the amount of streptococcic disease. Following the outbreak of war in Europe it was necessary to remove the collected material to New York and to complete the studies in the laboratories of the International Health Division there. This is, of course, only one example of the tremendously disruptive force of war on medical research.

HAIR LACQUER PADS—A WARNING

Information has come to the office of *THE JOURNAL* to the effect that certain hair lacquer pads, widely used by women throughout the United States to make the hair conform to recent styling or "up-do," have been causing dermatitis or severe inflammations of the skin around the back of the neck and ears. Cases have come to the attention of physicians in many cities. The Food and Drug Administration, immediately on notification, made a preliminary investigation which, according to reports reaching *THE JOURNAL*, indicates that the irritative action results from a change in the formula of manufacture of the products under investigation by the inclusion of a new gum. It may take some time to identify this ingredient accurately. With the usual alertness and efficiency that have characterized its activities the Food and Drug Administration has issued a request for the recalling of hair lacquer pads manufactured by Hubere Cosmetics of Chicago and of the Parfait Powder Puff Company, an Illinois corporation. Under the circumstances, women will do well to discontinue the use of these hair lacquer pads until their harmlessness has been established.

ANTHIOMALINE IN CLINICAL MEDICINE

Anthiomaline is lithium antimony (trivalent) thiomalate prepared as a 6 per cent solution, 1 cc of which contains about 0.01 Gm of antimony. An analysis of the extensive pharmacologic and experimental studies has just become available.¹ The drug has been employed therapeutically in venereal lymphogranuloma, granuloma inguinale, schistosomiasis, leishmaniasis, filariasis, trypanosomiasis, febrile jaundice, multiple sclerosis and trachoma. Therapeutic dosage depends on the disease to be treated, as do some of the toxic reactions to the drug. Its approximate range of therapeutic effectiveness was indicated by early experiences with venereal lymphogranuloma. It has been proposed to begin with 60 mg injected intramuscularly and to increase the dose of the single injections to a possible maximum of 300 mg until a total dose of between 2 and 4 Gm has been reached. Injections ordinarily are given three times a week, and repetition is advisable after an interval of several weeks. The maximum dose for a single injection may be determined by the appearance of rheumatoid pains, which constitute the most widely

observed toxic reaction. The pains may be localized or general, they appear several hours after injection and they usually last twenty-four hours and occasionally longer. Painful swellings at the site of the injection sometimes occur. Salivation, retching, vomiting and abdominal pains have been observed. Slight fever, headache, thirst and fatigue may also appear in the course of treatment. Venereal lymphogranuloma is the condition in which anthiomaline has been used most extensively, some 250 cases having been recorded in the literature. Excellent results were obtained in 35 to 75 per cent, and failures have been encountered in from 10 to 25 per cent of the patients treated. Experience with granuloma inguinale has been too scanty to warrant conclusions, although the results appear promising. Anthiomaline treatment of filariasis on a small number of patients has on the whole been disappointing. Good results have been uniformly reported with the use of this drug in more than 130 cases of genitourinary schistosomiasis. The efficacy of anthiomaline in cases of leishmaniasis is extremely doubtful. Thirty-three cases of trypanosomiasis have been treated with a combination of moranyl and anthiomaline with consequent sterilization of lymph and blood and reports of cure of fifteen months' duration in 17 cases. From the information available it may be concluded that anthiomaline has a considerable variety of therapeutic usefulness and a sufficiently low toxicity to warrant its further clinical trial.

HEALTH AND THE "VICTORY CORPS"

The United States Office of Education, sponsoring the Victory Corps in high schools, has published the proceedings of a committee of physicians and educators convened by the Office of Education to outline preparation of teachers for the program of physical fitness through health education.¹ The shortage of school personnel for health education led the United States Commissioner of Education to consider the possibility of giving supplementary training to science teachers and to teachers of home economics and physical education. The committee² met in May and formulated standards which teachers should meet if they are to be expected to function in the health education program. These standards, in general, indicate that persons having medical knowledge, such as doctors, are not usually equipped pedagogically, and vice versa. The findings and recommendations of the committee, which should be of interest to physicians and educators, and especially to physicians serving as public health officials in school health programs or as members of boards of education, are available in a reprint¹ from the official biweekly publication of the United States Office of Education, "Education for Victory." Inquiry should be addressed to the United States Office of Education, Federal Security Agency, Washington, D C.

¹ Reprint Education for Victory Official Biweekly of the United States Office of Education Federal Security Agency Washington D C 1 June 15 1943

² W. W. Bauer M.D. William H. Bristow Lillian Davis Nees Exton Edna Gerken Ruth E. Grout Philip G. Johnson Ray Kauffer Dorothy La Salle Margaret Leonard Leon R. Meadows Florence O'Neil Jackson R. Shorman Sherwood D. Shankland Frank Stafford Clair E. Turner Jennie Wahlert R. W. Webster and Charles C. Wilson M.D., chairman.

¹ A Summary of Current Literature on Anthiomaline, National Research Council Division of Medical Sciences Prepared by the Office of Medical Information Aug 18, 1943

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

AVIATION MEDICAL EXAMINERS

Graduation exercises were held at the School of Aviation Medicine, Randolph Field, Texas, on August 26 following completion of the course for aviation medical examiners. The didactic portion of the course was conducted at the School of Aviation Medicine, Randolph Field, Texas, and the practical portion of the course at the three army air forces classification centers. The list of students graduating follows:

ALABAMA
James P. Collier, Major, Tuscaloosa
Albert H. Green, Major, Birmingham
Elvis N. Kaiser, Major, Montgomery
James H. Meigs, Captain, Anniston
Dwight D. Smith, Captain, Birmingham

ARIZONA
John S. Mikell, Major, Tucson
William G. Shultz, Major, Tucson

ARKANSAS
Barnett P. Briggs, Captain, Little Rock

CALIFORNIA
Charles Benninger Jr., Captain, Oroville
Henry C. Bernstein, Captain, San Francisco
Norman C. Fox, 1st Lieut., San Bruno
William A. Gannon, 1st Lieut., Pasadena
Herbert Greenwood, Major, Oakland
Millard E. Gump, Major, Oakland
Gordon C. Hall, 1st Lieut., Soledad
Ronald L. Hughes, 1st Lieut., Los Angeles
Jesse J. Iverson, 1st Lieut., San Francisco
Maxwell S. Kassel, 1st Lieut., Hondo
Frederick G. Kirby, 1st Lieut., Los Angeles
Edward A. Kirz, 1st Lieut., Butte Meadows
Arthur L. Kobal, 1st Lieut., Los Angeles
Donald O. McGowan, Major, Los Angeles
Newell L. Moore, Major, Santa Ana
Ralph E. Netzley, Captain, Pasadena
Maurice J. Regan, 1st Lieut., Los Angeles
Frederick G. Reynolds, Captain, Los Angeles
George H. Rue, 1st Lieut., Riverside
Lawrence A. Solberg, 1st Lieut., Kerman
Milo K. Tedstrom, Major, Santa Ana
George E. Webster, 1st Lieut., Inglewood
Harris R. Wilson, Captain, Modesto

COLORADO
Robert K. Dixon, Major, Denver
Bryce D. Smith, 1st Lieut., Denver

CONNECTICUT
George A. Burnie, 1st Lieut., Danbury
George R. Eckert, 1st Lieut., Danbury
Ronald H. Kettle, Major, Norwich
Royal A. Meyers, Major, Watertown
Victor G. H. Wallace, Major, Darien

DELAWARE
Constance A. D. Alonzo, 1st Lieut., Wilmington

DISTRICT OF COLUMBIA
George F. Buer III, Lieut. Col., Washington
John Louzan, Captain, Washington
Leo H. Mugmon, 1st Lieut., Washington

FLORIDA
Anthony J. Barranco, 1st Lieut., Lake Wales
Albert D. Kistin, 1st Lieut., Bay Pines
Carl C. Mendoza, 1st Lieut., Jacksonville
Robert J. Needles, Major, St. Petersburg
Murray M. Reckson, 1st Lieut., Miami
Francis C. Skilling, Major, Miami
Frank L. Snyder, Captain, Hollywood
Cyrus H. Stoner, Major, Fort Pierce

GEORGIA
Braswell E. Collins, Captain, Waycross
Gordon L. Green, Major, Mount Berry
Oscar H. Lott, Captain, Savannah
William B. Turk, Captain, Nelson

IDAHO
John H. Culley, 1st Lieut., Idaho Falls
Frederick H. Haigler Jr., Major, Boise

ILLINOIS
Raymond H. Abrams, 1st Lieut., Chicago
Marvin F. Austin, Major, Chicago
Ben H. Barbour Jr., 1st Lieut., Centralia
George W. I. Bard, 1st Lieut., Sheldon
Merrill C. Beecher, 1st Lieut., Knoxville
Carl A. Gebuhr, 1st Lieut., Evansville
John W. Gray, Captain, Geneva
Anton P. Huml, 1st Lieut., Peoria
Roland F. K. Jordan, Captain, Pekin
Herbert Kahan, Captain, Chicago
Emerson C. Kunde, Captain, Woodstock
Robert C. Long, 1st Lieut., Chicago
Cornelius E. Murphy, Captain, Chicago
Oliver Rian, Captain, East Peoria
Frederick J. Ricketts, Captain, Sadorus
Percy J. Ross, Major, Chicago
Lee H. Schlesinger, Major, Hines
Edward J. Schmeil, 1st Lieut., Chicago
Albert Sheade, 1st Lieut., Chicago
Everett L. Strohl, Major, Chicago
Charles R. Sugden, Captain, Deerfield
Sydney W. Tauber, 1st Lieut., Chicago
Scottie J. Wilson, 1st Lieut., Urbana

INDIANA
Victor F. Albright, 1st Lieut., Indianapolis
Clarence E. Bunge, Captain, Logansport

Robert M. Dearmin, Major, Indianapolis
Floyd L. Grandstaff, Captain, Decatur
Howard E. Hill, Major, Muncie
Howard H. Marks, Captain, Evansville
Raymond J. Modjeski, Captain, Hammond
Frederick H. Simmons, Captain, Goshen
Robert A. Staff, Captain, Rockville
Charles O. Weddle, 1st Lieut., Lebanon

IOWA
Harold C. Bastron, Major, Red Oak
Daniel F. Crowley, Captain, Des Moines
Frank D. Edgington, Colonel, Spencer
Robert H. Foss, 1st Lieut., Remsen
Edwin B. McConkie, Major, Cedar Rapids
Kermit W. Myers, 1st Lieut., Sheldon
Merlin R. Wyatt, Captain, Manning

KANSAS
Charles H. Johnson, 1st Lieut., Kinsley
Charles R. Magee, 1st Lieut., Wichita

KENTUCKY
Harry S. Andrews, Major, Louisville
Horace W. Carle Jr., 1st Lieut., Louisville
Arthur C. McCarty, Major, Louisville
John K. Mack, Captain, Louisville
Lawrence T. Minish Jr., Major, Frankfort
Edgar C. White, Captain, Louisville
Earl P. Wright, Captain, Pikeville

LOUISIANA
John J. Burdin, 1st Lieut., Lafayette
John Corso, 1st Lieut., Independence
Parker K. Hughes, Captain, New Orleans
Julien C. Pate Jr., Captain, New Orleans
Salvatore J. Russo, 1st Lieut., New Orleans
Alvin Stander, Captain, Baton Rouge

MAINE
Harry Butler, Major, Bangor
Louis C. Lesieur, Captain, Biddeford

MARYLAND
Walter E. Yingling, Major, Baltimore

MASSACHUSETTS
Timothy E. Allen, Captain, Arlington
Harwood W. Cummings, Captain, Greenfield
Howard H. Englander, 1st Lieut., Boston
John J. Kelleher Jr., 1st Lieut., Lawrence
John E. Smith, 1st Lieut., East Weymouth
Knowlton D. Stone, Captain, Greenfield
Roland P. Wilder, 1st Lieut., Malden

MICHIGAN
Herschel L. Browns, Captain, Ann Arbor
Frederick W. DeYoung, Captain, Spring Lake
Robert E. Falls, Captain, Kalamazoo
Willard E. Fischer, 1st Lieut., Wyandotte

Neil A. Gates Jr., Captain, Ann Arbor
Jason (NMI) Hodges, 1st Lieut., Detroit
Arvid G. Holm, Captain, Three Rivers
Clinton H. McKay Jr., 1st Lieut., Ann Arbor
Philip T. Mulligan, Captain, Mount Clemens
Jesse P. Muse, 1st Lieut., Detroit
John E. Patrick, 1st Lieut., Detroit
Leland J. Rather, 1st Lieut., Detroit
Walter F. Sethney, Captain, Menominee
Everette M. Steffes, 1st Lieut., Detroit
Kenneth N. Wells, 1st Lieut., Spring Lake
Stewart C. Wheeler, 1st Lieut., Detroit

MINNESOTA
Harold J. Frank, Captain, New Prague
Richard B. Graves, 1st Lieut., Red Wing
Bernard N. Karleen, 1st Lieut., Balaton
Paul C. Leck, Captain, Austin
Joseph J. Mack, Lieut. Col., St. Paul
Robert E. Mattison, 1st Lieut., Minneapolis
Jan H. Tillisch, Captain, Rochester

MISSISSIPPI
Randolph L. Clark Jr., Captain, Jackson

MISSOURI
Charles H. Barnett Jr., 1st Lieut., Kansas City
Victor K. Hager, 1st Lieut., St. Louis
Aretus D. Martin, 1st Lieut., Sikeston
John B. Ryan, 1st Lieut., Kansas City
Hugh R. Smith, 1st Lieut., St. Louis
William D. Susanka, 1st Lieut., St. Louis

MONTANA
Robert G. Lemon, Captain, Glendive
Leland G. Russell, Captain, Billings

NEBRASKA
William R. Malony, Captain, Omaha
Edwin J. Shaughnessy, 1st Lieut., North Platte

NEW JERSEY
Jules E. Baime, 1st Lieut., Newark
Joseph F. Corless, Major, West New York
Allan B. Crunden Jr., Captain, Jersey City
Gerald B. Demarest, 1st Lieut., Westfield
Philip D. Gilbert, Captain, Camden
Joseph J. Kohn, 1st Lieut., Trenton
Thomas A. Masciocchi, Captain, Orange
Meyer Notkin, Captain, Paterson
Salvatore S. Piacente, Captain, Jersey City
Charles G. Prather, Captain, Westwood
Richard Wagner, 1st Lieut., South Orange

NEW YORK
Jules B. Aaron, Captain, Brooklyn
Adrian R. Avitabile, Captain, Brooklyn
Raymond K. Bush, Major, Mount Vernon

Joseph M. Covelli Captain Flushing
Martin J. Coyne 1st Lieut., Ceneva.
Maurice M. Croll, 1st Lieut., Brooklyn
Martin Cutler Captain Brooklyn
Salvatore A. Dispenza 1st Lieut. Lackawanna
John A. Failla, 1st Lieut., New York
Max M. Goldenkranz, Captain Brooklyn
Eugene L. Griffin, Captain New York
Wilfred Guerra 1st Lieut. Brooklyn
John A. Hamilton Jr 1st Lieut. Brooklyn
Archie M. Harris, Captain, Rockville Centre
Myron L. Kenler 1st Lieut., Maspeth
John C. Kilroe Major New York
George G. Knight 1st Lieut. Piermont
Edgar A. Lawrence Captain New York
Lewis B. London, Captain New York
William G. MacDonald 1st Lieut. New York
Habeeb Z. Maroon 1st Lieut. New York
Joseph H. Merin Captain Bottom Landing
Saul Michalover Major Brooklyn
Myron J. Miller Captain New York
Walter W. Miner Jr, Major, Baldwin
Holger C. Nelson Captain Watertown
Alfred H. Rifkin 1st Lieut., New York
Carl C. Rosenberg 1st Lieut., Brooklyn
Emanuel V. Rumore Captain Brooklyn
Julius J. Sachs 1st Lieut. New York
Jacob Schneider Captain Brooklyn
John E. Sullivan Major New York
Estel G. Surber Captain Brooklyn
John H. Wadsworth Captain Cobleskill
Milton A. Wald 1st Lieut. Brooklyn

NORTH CAROLINA

Roderic O. Jones 1st Lieut. Burnsville.
Robert E. Stone Captain Chapel Hill

OHIO

Nicholas G. Amato 1st Lieut., Cincinnati.
Jack J. Berry 1st Lieut. Cleveland.
Robert F. Corwin Major Dayton
Arthur F. Dornier Major Akron
James A. Ellery 1st Lieut. Shelby
Clen K. Folger Major Cleveland
Reuben H. Hamman 1st Lieut. Waterville.
John R. Harding Major Cincinnati.
Francis J. Heringhaus Major Mansfield
Charles S. Higley Major Cleveland.
George F. Hilles Captain Cleveland Heights
Harold L. Keiser 1st Lieut. Fremont.
Howard Lauer 1st Lieut. Dayton.
William R. Liebschner 1st Lieut. Deshler
Earl D. McCallister Captain Chillicothe
John Mighonico 1st Lieut. Cleveland
Morris S. Osherwitz Captain Cincinnati
Adolph B. Schneider Jr Captain Cleveland
John R. Schroder 1st Lieut. Cincinnati
Malcolm E. Switzer 1st Lieut. Galion.
Harold O. Tagett Captain Rock Creek
Stanley W. Whitehouse 1st Lieut., Cincinnati

OKLAHOMA

George E. Dodson Captain Muskogee.

Willard D. Holt 1st Lieut. Altus
Roy L. Neel Captain Oklahoma City
Charles R. Rayburn, Lieut. Col. Norman
John R. Smith, Captain, Oklahoma City

OREGON

Richard I. Rich 1st Lieut., Woodburn
Robert P. Scheffer 1st Lieut. Portland

PENNSYLVANIA

Harold S. Agnew 1st Lieut., Ben Avon
Daniel A. Atkinson Jr, 1st Lieut., West View
Harold P. Belknap Captain, York
Maurice L. Brown, 1st Lieut., Philadelphia
Nicholas L. Ciaccia Captain, Pittsburgh.
Anthony N. Domanos, 1st Lieut., Huntingdon
Walter C. Ferrer, Captain Conneaut Lake
George E. Fissel Captain Philadelphia
Robert T. Gillis Captain, Tarentum
George L. Greaser Major Altoona
Duncan S. Hutton Captain Chester
Willard W. Hayne Captain, Paulina
Hubert B. Haywood Jr 1st Lieut. Abington
Samuel S. Huntzberger 1st Lieut., Sinking Springs
Nathan Katsiff 1st Lieut., Philadelphia
Luther A. Lenker 1st Lieut., Harrisburg
James F. MacDonald 1st Lieut., Pittsburgh
Joseph L. Magrath Major Upper Darby
John L. Meyers 1st Lieut., Shillington
Jack M. Orman 1st Lieut. Philadelphia.
William D. Prescott 1st Lieut., Pine Grove
Charles L. Sacks 1st Lieut. Philadelphia
Charles Schnall Captain Philadelphia
Roman V. Ulane 1st Lieut. McAdoo
Jay E. Weidenhamer 1st Lieut., Punxsutawney

RHODE ISLAND

Richard Rice Captain Providence.

SOUTH CAROLINA

Abram E. Adams Captain Greenwood

SOUTH DAKOTA

George R. Dornberger Major Miller

TENNESSEE

Robert M. Conger 1st Lieut., Lexington
Marshall B. Lynch 1st Lieut. Memphis
John C. Turley 1st Lieut. Memphis.

TEXAS

Arthur B. Alexander, Captain Spur
Alfred C. Bennett Captain Marlin
Herman R. Buzbee 1st Lieut. Dallas
Hamilton F. Ford Captain, Galveston
William C. Ghormley 1st Lieut., Corpus Christi
Frederick J. Koberg 1st Lieut. Big Spring
John W. Lanus 1st Lieut. Dallas
Gordon Phillips 1st Lieut. Haskell
Marcus A. Pierson Captain Galveston
Nellins C. Smith Captain Hillsboro
D. D. Wall Captain San Angelo
Stephen W. Wilson 1st Lieut. Linden.

UTAH

Kurt E. Rose 1st Lieut. Salt Lake City

VERMONT

Joseph B. Crowley 1st Lieut. Brattleboro
Paul C. Willard 1st Lieut. Montpelier

VIRGINIA

James L. Davis, Captain Raccoon Ford
Edward M. Holmes Jr, Major Richmond
Hubert C. McCoy 1st Lieut., Gordonsville
Charles D. Schilling Captain, Charlottesville
Frank A. Zach 1st Lieut., Newport News

WASHINGTON

Donald D. Corlett Major, Seattle
Frank J. Cornelius Captain, Olympia
Harry A. Gilbert, Captain Mount Vernon
Russell B. Hanford Captain, Spokane
Albert D. Haug Captain, Wenatchee
Charles W. Hoffman 1st Lieut. Wauwatosa
William C. Kintner Jr, Captain Seattle.
Lumir M. Mares Captain, Wenatchee.

Lloyd H. Smith 1st Lieut., Wenatchee
Rudolph E. Stuart, 1st Lieut., Spokane

WEST VIRGINIA

James E. McClung, 1st Lieut., Richwood
Robert A. McLane Jr, 1st Lieut., Arthurdale
Richard N. O'Dell, 1st Lieut., Belle

WISCONSIN

William F. Cormack 1st Lieut., Wausau.
Max F. Drozewski, 1st Lieut., Milwaukee
Rollie M. Harrison, Captain, Boscobel
Erwin J. Jelenchick, 1st Lieut., Milwaukee
Robert G. Kvarnes, 1st Lieut., Superior
Robert C. Love, Captain, Glenwood City

HOME ADDRESS UNKNOWN

Juan Benavides Lieut. Comdr., Peruvian Army

DOCTORS OPERATE UNDER SHELLFIRE

Following is a dispatch as printed in the Chicago *Sun* September 24, from the United Nations Headquarters in North Africa

Three delicate operations of brain surgery were performed successfully in a tent among the sand dunes of Salerno during the critical days when the Germans had the entire Fifth Army bridgehead under artillery fire, it was revealed today

Lieut. Col. Paul K. Sauer of New York Hospital took his contingent ashore amid a rain of German lead

Exhausted by two days and nights of bombing, strafing and mortar fire, the men of the evacuation hospital finally organized their scattered equipment and spent all night setting up portable operating rooms and tent walled wards on a field not far inland. Then the tired staff began a twenty-four hour schedule of operations and treatment.

Major Howard A. Patterson of New York, former surgeon at Roosevelt Hospital and a veteran of the Tunisian campaign, led his surgical staff in a round the clock schedule, with three teams working in succession on never empty operating tables. Nurses were not due to be landed for several days, so the hospital's enlisted men donned operating gowns and sterilized masks and worked long hot hours in operating tents. Many had no more than two hours' sleep in the first three days.

Casualties that piled up during the first week of the campaign made expansion necessary so a surgeon was added and then tents from a medical battalion. Abdominal punctures, head wounds, fractures and burns formed the bulk of the hospital cases.

COLONEL DABNEY AWARDED LEGION OF MERIT

Col. Albert S. Dabney, M. C., U. S. Army, who recently relinquished his duties as assistant commandant of the Medical Field Service School, Carlisle Barracks, Pennsylvania, was awarded on September 15 the Legion of Merit for meritorious conduct and outstanding service. The presentation was made by Brig. Gen. Addison D. Davis, commandant of the school. It read in part as follows:

'Col. Albert S. Dabney, M. C., U. S. Army. For exceptionally meritorious conduct in the performance of outstanding service. From the beginning of the emergency until the end of 1941 he has been director of the Medical Department Equipment Laboratory, where by his conspicuous energy and ability he developed many new major articles of equipment needed by the Medical Department for war. Since Jan. 1, 1942 as assistant commandant of the Medical Field Service School he has had immediate charge of training approximately 14,000 Medical Department officers and officer candidates. His careful supervision of their instruction, his unremitting devotion to duty and his knowledge have resulted in giving these officers the essentials of their duties for the field thus contributing to the success of the United States in the present war.'

With twenty-seven years of service to his credit, Colonel Dabney already holds decorations from the American, British, French and Haitian governments, as well as numerous other military ribbons. He was recently appointed assistant dean of the University of Pittsburgh School of Medicine, where he took up his duties on October 1.

SOLDIER'S MEDAL AWARDED TO ARMY NURSE

The War Department announced on September 1 the award of the Soldier's Medal to 2d Lieut Margaret M. Decker, Army Nurse Corps, the second woman ever to receive this award, for heroism at Topaz, Calif., on June 19, 1943, when, according to the citation accompanying the award, while swimming in the Colorado River, without regard for her safety she went to the rescue of a soldier and saved him from drowning. Though physically exhausted, Lieutenant Decker administered first aid to the soldier and accompanied him to a station hospital, where he was given medical attention. Lieutenant Decker entered the army on Nov. 19, 1942. She is a graduate of the St. Barnabas Hospital School of Nursing, Newark, N. J., 1938, and is assigned to the 127th Station Hospital, Desert Training Center, California.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

QUOTAS OF INTERNS AND RESIDENTS

Since many hospitals have not returned their questionnaires, it is impossible at this time to give every hospital its quota of interns and residents. It was therefore felt advisable to release this memorandum through *THE JOURNAL* so that the state chairmen for the Procurement and Assignment Service and the hospital superintendents would have this additional information concerning the nine-nine-nine program. As soon as the hospitals in each state have been appraised, the state chairmen and the hospital superintendents will be notified of the definite quota which appears as a blank in paragraph two of the following release from the Directing Board.

1 The new intern-resident program based on reduction in the length of internships to nine months and deferment by the Army and Navy of commissioned interns to serve as residents begins Jan. 1, 1944, for nine month periods. This program consists of

- Nine months internship
- Nine months junior residency
- Nine months senior residency

This program applies to all interns and residents who will have completed nine months of hospital service on or after Jan. 1, 1944. Deferments from active duty which have already been approved by the Army or Navy for residents will be continued to the date authorized.

2 Quota for _____ hospital

_____ internships for nine months period

_____ combined number junior and/or senior residencies for nine months (major portion should be junior residents so that some of them can be retained in senior residencies for nine months period)

Adjustments of this quota may be authorized by the directing board of the Procurement and Assignment Service but will be made only under exceptional circumstances and on the recommendation of the state chairman of the Procurement and Assignment Service.

3 These quotas include all interns and all residents who will serve the institution, including those physically disqualified or otherwise ineligible for military service and those interns who are commissioned officers but who automatically are deferred by the military services for their nine month internships and those residents who are deferred for nine months for either a junior or a senior residency.

4 Failure to limit staffs to these allocated numbers will result in preventing the Procurement and Assignment Service

PRISONERS OF THE JAPANESE

According to the *Chicago Tribune* of August 12, Lieut. Amiel L. Palermo, formerly of Chicago, is a prisoner of the Japanese. A card received recently by his mother indicated that he is being held a prisoner in the Philippines in prison No. 1. Lieutenant Palermo graduated from the University of Illinois College of Medicine, Chicago, in 1940 and entered the service on July 5, 1941.

According to the *New Albany (Indiana) Ledger* of September 3, word has been received from Capt. Thomas H. Hewlett, formerly of Washington, D. C., that he is safe and well. Captain Hewlett has been held a prisoner of the Japanese since the fall of Corregidor. He graduated from the University of Louisville School of Medicine in 1938 and entered the service in April 1941.

According to the *Stanton (Mich.) Clipper Herald*, word has been received from 1st Lieut. Arthur L. Benison, former physician in the Edmore Hospital, Edmore, Mich., who is being held a prisoner of the Japanese. Lieutenant Benison, who graduated from the University of Michigan Medical School, Ann Arbor, in 1937, was a member of a medical unit stationed in the Bataan Peninsula.

from requesting the Surgeon General to defer commissioned officers to fill essential residencies in the institution.

5 The greater the number of vacancies filled with applicants who are physically disqualified or otherwise ineligible for military service, the more certain is the maintenance of the house staff, therefore no requests for deferment of commissioned officers should be considered until every effort has been exhausted to fill the vacancies with individuals ineligible for military service.

6 For the deferment of a commissioned officer to fill an essential residency, form number 218 should be completed in triplicate and forwarded to the state chairman of the Procurement and Assignment Service for his approval and submission through the central office to the surgeon general of the service in which the applicant holds a commission. Attention is called to the necessity of the individual recommended for deferment to indicate his desire to accept this appointment by personal signature in the space provided.

7 Hospitals should make contacts and appointments of prospective interns and residents in the usual manner. The Procurement and Assignment Service has no authority to assign interns and residents to hospitals, hence this assignment of an allowable quota is no guaranty that a hospital will be able to procure that number of interns or residents. Hospitals may notify the central office of the Procurement and Assignment Service of vacancies in authorized internships and residencies. This office will arrange for the publication of this information so that individuals who are available and interested may apply for such positions.

8 Certain junior residents who are commissioned officers may be deferred for a third nine months to serve as senior residents within the limitation of authorized quotas. Selection of junior residents and of senior residents may be made from interns and junior residents respectively serving in the same hospital or in other hospitals.

9 Commissioned officers who are to serve as junior or senior residents for nine month periods should be selected at least four months before the termination of their current deferments. Form No. 218 must be submitted promptly for all such individuals in order that deferments may be authorized for the issuance of orders to active duty. Requests for deferment received after orders have been issued cannot be approved.

10 Any questions concerning this announcement or the nine-nine-nine program should be addressed to the state chairman of the Procurement and Assignment Service and not, under any circumstances, to the Office of the Surgeon General.

CIVILIAN DEFENSE

NEED FOR PROTECTIVE SERVICES IN TIME OF WAR

A memorandum recently issued by the Office of Civilian Defense, Washington, D. C., to regional medical, nursing, engineer, gas and rescue officers states that rumors that civilian defense is no longer necessary have recently been spread by irresponsible persons. These rumors are thoughtless or calculatingly subversive, for they are not supported by Army authorities responsible for our coastal defenses or by the present military situation. Fortunately the success of our armed forces overseas has saved us thus far from experiencing the horrors of enemy bombing to which the cities of our allies are being subjected. In the opinion of the best military authorities our coastal areas and industrial centers will not be free of the danger of enemy attack from the air or of widespread sabotage until the last day of the war.

Civilian defense is also needed as one of the essential measures for safeguarding internal security. This is especially true of the Emergency Medical Service. If we had not created a nationwide organization for civilian defense two years ago, we would be obliged to organize one today for home security. Disasters of all kinds have increased as the result of the tremendous speeding up of our great industries, the overburdening of our railroads and the experience of hundreds of thousands of new war workers. Our police, fire departments, public works and utility services and our hospitals, on which we depend for protection, are being increasingly depleted of trained personnel. We must therefore strengthen our voluntary protective services throughout the land. Along the Pacific and the Atlantic coasts these services must be especially strong in volunteer personnel and equipment to guard us against the hazards of enemy attack and sabotage until that day when the Army itself advises us that the danger is ended.

MOBILIZATION OF EMERGENCY MEDICAL SERVICE ON AIR RAID ALERTS

The Office of Civilian Defense, Washington, D. C., issued on September 13 Circular Medical Series No. 33 on the "Mobilization of the Emergency Medical Service on Air Raid Alerts," in which the different colored warning signals are explained as follows:

Yellow Warning Signal—The chief of Emergency Medical Service and his deputies assigned to duty at control centers should receive the yellow warning and proceed immediately to their designated posts. All casualty receiving hospitals should receive the yellow warning, which should be relayed immediately to the administrator, the superintendent of nurses and the chief engineer.

Blue Warning Signal—1 Mobile medical teams (a) Teams composed of resident personnel of hospitals prepare for action by assembling, with equipment, at a designated point in the hospital and stand ready for orders from the control center. (b) Teams composed of persons from the neighborhood of a hospital assemble at the hospital. (c) Teams designated to assemble at casualty stations remote from a hospital report to the casualty station. 2 Stretcher teams. Stretcher teams on call assemble at their posts of duty at hospitals or casualty stations. 3 Ambulance teams (driver and attendant) (a) Teams composed of persons on duty at a hospital or depot at which the ambulance is parked prepare their vehicles and equipment for action. (b) Teams composed of persons residing in the neighborhood of hospitals or ambulance depots assemble at the hospital or depot at which they are on call. 4 Hospital personnel. The following will report to the hospitals to which assigned physicians on shock, surgical triage, fracture or other emergency teams, anesthesiologists, nurses and volunteer nurses on call at the time for emergency duty, hospital protection personnel such as wardens, fire guards, messengers and essential maintenance personnel. In preparing hospitals for action, every effort should be made to reduce to a minimum the movement through streets. Hospital administrators and chiefs of staff should therefore determine their minimal requirements and recommend emergency personnel for membership

in the U. S. Citizens Defense Corps or the Civilian Defense Auxiliary Group. The chief of Emergency Medical Service should arrange for the appointment, training and proper identification of such emergency personnel.

Red Warning Signal—Members of the Emergency Medical Service stand by at their posts throughout the red warning period until dispatched to incidents or casualty stations on orders from the control center. The physician in charge of a mobile medical team at a hospital or casualty station may send forward a stretcher team or other personnel to nearby incidents on his own initiative.

Omission of Yellow or First Blue Warning—The sudden or rapid approach of enemy planes may prevent the giving of either the yellow or blue warning, or both. In the event that a red warning is given without preliminary warnings, Emergency Medical Service personnel will immediately take the action normally taken on the yellow and blue warnings.

Blue Warning Signal Following Red—Emergency Medical Service personnel remain at assigned posts or at posts to which they have been dispatched until relieved by the chief of Emergency Medical Service.

All Clear—Emergency Medical Service personnel remain at their posts of duty until relieved by the chief of Emergency Medical Service.

HOSPITAL MEN VOLUNTEERS

The Office of Civilian Defense, Washington, D. C., issued on September 13 Operations Letter 140 to state and local defense councils for the attention of war services boards and volunteer offices, pointing out the acute shortage of manpower in hospitals throughout the country. The Office of Civilian Defense, in cooperation with the American Hospital Association, is working on a plan to promote the use of men volunteers in hospitals where they are needed. At a meeting of the American Hospital Association in Buffalo, September 13-17, the plan as outlined here was presented in order that hospital administrators might be able to hear from their own group what has already been done in some hospitals and how through their local defense councils they can secure help in recruiting men volunteers.

The Health Committee should be asked by the War Services Board to ascertain from hospital administrators the extent of their manpower problem. The Health Committee should appoint a special committee to do this job, and on this committee should be represented the principal hospitals, the Volunteer Office and the Publicity Committee of the Defense Council. If a serious shortage is found the committee should assist the hospitals to determine what assistance hospital men volunteers can give. The committee should then take the following steps:

- 1 Request the Volunteer Office to obtain men volunteers to work in hospitals.
- 2 Plan to publicize local needs for men volunteers through the publicity director of the local Defense Council and the Volunteer Office, using all appropriate mediums such as newspapers, the radio and speakers.
- 3 Plan with hospital administrators, the Volunteer Office and the Training Committee of the Defense Council for organizing hospital staffs for the proper use of volunteers, including provision for their training and supervision.
- 4 Arrange with the executive of the Citizens Service Corps for special induction ceremonies and awarding of insignia to the men hospital volunteers.

The Volunteer Office should be responsible for securing the hospital men volunteers. The following points will guide the Volunteer Office in fulfilling this responsibility:

- 1 The files should furnish the first source of volunteers. If there is not a sufficient number of suitable men registered, recruiting should be undertaken at once.
- 2 The general public can be reached most effectively through the press and the radio. Stories should indicate clearly what kinds of men volunteers are wanted, how many are needed, where they will work and when and where interested men can be interviewed.
- 3 Medical schools and colleges provide another resource. Speakers should be sent to explain the need to such students.

and convenient arrangements should be made for interviewing interested men

4 Organized men's groups, such as labor organizations, church groups, ministers' organizations, fraternal organizations and men's civic groups, are a potential source. Organizations of the clergy are an especially good source. Speakers should be made available to these men's organizations, and convenient arrangements should be made for interviews with interested applicants

5 Selection from among men volunteers either enrolled or especially recruited should be carefully made on the basis of specifications of the various hospitals

6 Referrals should be made directly to the hospitals as long as the hospitals' need for men volunteers continues to be unfilled

7 Follow-up on referrals should be made to determine whether the hospitals are satisfied, and replacements should be made whenever necessary

MISCELLANEOUS

U S CADET NURSE CORPS PROGRAM

According to the Division of Nurse Education, U S Public Health Service, Washington, D C, expansion of housing and educational facilities will be necessary to many nursing schools if the required number of student nurses are to be enrolled in the U S Cadet Nurse Corps. Institutions which cannot finance the entire cost of such additions are eligible to apply for assistance under the Lanham act if they are participating in the Cadet Nurse Corps program. New construction must be avoided wherever possible by leasing or purchasing an existing building which can be suitably altered. Institutions applying for financial aid under the Lanham act should make a preliminary request to the regional office of the Federal Works Agency having jurisdiction in the state. Institutions which do not require financial assistance should make application for priorities assistance directly to the War Production Board, Washington, D C, on form WPB 617. WPB 28141 will accompany WPB 617. In the "hospital section" of WPB 28141 only questions pertinent to the applicant hospital need be answered. In the "nurses' home" section, all questions must be answered

WARTIME GRADUATE MEDICAL MEETINGS

On October 14 a conference under the auspices of the Wartime Graduate Medical Meetings will be held at the Army and Navy General Hospital at Hot Springs, Ark., with Lieut Col Irving S Wright, M C, as chairman. The schedule will include papers entitled "Studies on the Mechanism of Recovery from Pneumococcal Pneumonia" by Dr Barry Wood and "Allergy as It Is Related to Bronchial Asthma," with case presentations by Dr Harry Alexander, and a round table in which Lieutenant Colonel Wright, Dr Wood, Dr Alexander and Major Dudley C Ashton, M C, will take part

On October 7 a conference was held at the same hospital on "Malignant Diseases in Military Age"

Other recent programs under the auspices of the Wartime Graduate Medical Meetings have been held at the Station Hospital, Fort Sill, Oklahoma, and Will Rogers Field, Oklahoma City

RELIEF WINGS INCORPORATED

Relief Wings, Inc, with headquarters at 80 East 42d Street, New York City, is a nonprofit organization for aerial mercy aids to civilians. The air ambulance service which this institution conducts is offered to charity patients at a cost of 5 cents per mile. For those patients who are able to pay the full operating cost of the airplane a charge of 14 cents per mile is made to cover all necessary costs. Flight surgeons and flight nurses on registers throughout the United States who have been receiving aeromedical training on the care of the airborne patient are available

Dr Harry V Spalding is chairman of the organization's Aero Medical Research Committee. Miss Ruth Nichols, well known aviatrix, is the executive secretary. Among the sponsors, officers, sectional leaders and advisory committees of Relief Wings, Inc, are nationally known citizens, aviators and scientists

This organization is largely maintained by the donations which it receives, and contributions may be sent to Relief Wings, Inc, at 342 Madison Avenue, New York City

PUBLIC HEALTH UNDER HITLER

According to NDZ of July 12 the increased employment of women and the burdens thus placed on large families have made it necessary to extend the day nursery scheme and give more help to mothers of large families. The NSV needs assistance for these tasks. As far as it is not possible to meet this demand through normal channels, young girls will be called up for this purpose. This kind of war work is specially suited to the natural inclinations and interests of girls, as it consists exclusively of feminine tasks. It will not only enrich the knowledge and increase the ability of the girls but also in many cases inspire them in their choice of a vocation

The reich youth leader, the general trustee for the direction of labor and the minister of education have issued the directives for this work in a joint decree. They say that, where in special cases the requirements cannot otherwise be met by the labor offices, girls of the seventh form of *oberschulen* can be made available. The present seventh form will be employed on this work until August 31. They will take their holidays from September 1 to 20 and will enter the eighth form on September 21. They will be relieved by the girls of the new seventh form. These girls will be employed from Sept. 1, 1943 until Feb. 26, 1944, at the latest

The Social Welfare Office of the Reich Youth Directorate has been entrusted with the organization of this scheme. The girls may work, first, as assistants in day nurseries, in small harvest, agricultural and auxiliary kindergartens, and, secondly, in NSV recuperation institutions for juveniles and in connection with the Extended Child Evacuation Scheme. Where the need for assistants is fully covered, the girls may be employed to reinforce the NSV domestic help scheme locally or within the *kreis*. They must, however, be able to sleep at home. Before work of this kind is started there will always be parents' meetings at the schools, at which further details of the work will be announced. The cost of accommodation, food, insurance, fares and pocket money of 15 reichsmarks per month will be borne by the NSV

Nachrichten für den Aussenhandel of May 17 states that, owing to shortage of fish in Bulgaria, food preserving factories have been temporarily prohibited to preserve fish. This measure was deemed necessary in order to provide the population with as much fresh fish as possible. Despite the efforts of the authorities, insufficient fish has been landed lately, especially on the Black Sea coast, where the industry has been greatly handicapped by war conditions. Fishing tackle has become scarce and is difficult to replace in wartime. In the opinion of the fishermen the relatively low prices are also partly responsible for the present shortage. An appeal for higher prices was refused by the authorities

L'Action française of July 24 complains that children under 3 are not entitled to certain rationed food such as calf brain, liver, eggs and ham, which they need more than certain other categories. The birth rate is higher than five years ago, but too many infants die as a result of malnutrition. Since mothers have been encouraged to have more children, it is essential to feed the children properly

The *Deutsche Zeitung in den Niederlanden* of July 14 states that 99 per cent of the doctors who wrote the second letter to Seyss-Inquart have apologized to him. They are said to have declared that many of the signatures were forged

ORGANIZATION SECTION

MEDICAL ECONOMIC ABSTRACTS

HOW MANY PHYSICIANS ARE NEEDED

The United States Public Health Service has made a questionnaire study on medical conditions in the District of Columbia, Baltimore City, certain Maryland counties and Georgia.¹ The average weekly patient load is shown in the following table

Place of Practice	Averages			
	Office	Hos pital	Home of Patient	Total
District of Columbia	80	8	21	116
Maryland				
Baltimore	82	0	31	119
Exclusive of Baltimore	90	7	29	126
Total	89	7	30	126
Georgia				
Urban	78	11	23	112
Rural	79	6	26	111
Total	79	7	25	111

The averages, however, are somewhat deceptive, as they vary greatly according to age. Physicians under 45, especially those from 35 to 44 inclusive, care for two to three times as many as those above 64 years of age. The number of patients that can be seen naturally varies with the proportion of office and home visits. With considerable variation the average office hours in Baltimore for physicians are between four and five, while in the counties outside they are about an hour longer. The same difference exists between urban and rural counties in Georgia.

An effort was made to determine the possible optimum patient load. Sixty per cent of urban general practitioners declared that they could increase the present load. The remainder declared that they are caring for as many patients at present as they could manage. Only forty-nine per cent of rural physicians thought that they could care for more patients. This would mean an increase from 112 and 111 patients for urban and rural general practitioners respectively to 135 and 128 patients. From these facts some general conclusions are drawn. It is calculated that the number of persons per physician cannot be increased beyond 1,200 to 1,500 in Maryland and 2,000 to 2,400 in Georgia. This conclusion however, is affected by the fact that it is measured in both 'need' for medical services and by the economic 'demand' and it is not certain that this would not be changed if economic conditions improve, in Georgia, for example. 'The ratio of physicians to population constitutes nothing more than index of the maximum amount of services that can be provided but whether or not the physicians' potential services are fully utilized will depend not on their number but on the effective demand for services.'

¹ Crocco Antonio and Altman Isidore The Patient Load of Physicians in Private Practice Pub Health Rep 38 1329 (Sept 3) 1943

AN OPTIMISTIC OUTLOOK

Recent bulletins of the Metropolitan Life Insurance Company bring a combined message of remarkable improvement in vital conditions in the United States. In the first place we learn that, "despite the hardships of war, American wage earners and their families are living on the average longer than ever before."

Not only are we living longer but there is a promise that there will be more of us since "a steady rise in the American birth rate since 1933 will have paid, by the end of this year, a dividend of 2,000,000 additional babies for the ten year period."

The added number of births is also accompanied by a striking decline in the maternal death rate, so that "childbearing in this country is now safer than ever before," since "only about one third as many American mothers currently lose their lives in childbirth as compared with ten years ago. About two maternal deaths per thousand live births now take place in the United States, while prior to 1934 the rate was between six and seven per thousand."

Meanwhile, although there has been a recent outbreak of cerebrospinal meningitis which was the most extensive in the country's history, 'fortunately in 1943 we have a powerful weapon against this disease. The great majority of cases are now cured by the sulfa drugs, which have revolutionized the treatment of the disease. In the general population, prior to 1939, the proportion of deaths to cases was more than 40 per cent.

Preliminary data for 1942 for this country give a fatality rate only slightly more than 20 per cent. Where facilities for diagnosis and early treatment are better than average, fatality rates of 10 per cent or less are experienced. Indeed, in our army camps the rate has been only 3.5 per cent, as compared with 34 per cent in the first world war."

NEW HAMPSHIRE PREPAYMENT PLAN

The house of delegates of the New Hampshire Medical Society, meeting at Concord, N. H., on September 12, accepted a report of a committee on medical economics giving a detailed outline of a prepayment nonprofit organization. This plan will include the rural areas and, according to a report in the *Union* (Manchester, N. H.), will provide for premiums that "will appeal to the lower and middle, as well as the higher income brackets." The organization will be known as the "Blue Shield" and will be administered through the New Hampshire Blue Cross Hospitalization Plan. The house of delegates authorized the medical economics committee to work out details for the establishment of a corporation.

The house of delegates also adopted a resolution condemning the Wagner-Murray-Dingell bill and stated that in its opinion the need for improvement in the distribution of medical care 'can best be met by the extension of existing voluntary plans for medical and hospital care.'

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status—H. J. Res. 159 has passed the Senate, appropriating \$18,600,000 for grants to states including Alaska, Hawaiian Puerto Rico and the District of Columbia to provide, in addition to similar services otherwise available, medical nursing and hospital maternity and infant care for wives and infants of enlisted men of the fourth, fifth, sixth and seventh grades in the armed forces of the United States under allotments by the Secretary of Labor and plans developed and

administered by state health agencies and approved by the chief of the Children's Bureau. An additional appropriation of \$20,000 was also made available for salaries and expenses of the Children's Bureau in carrying out the program.

The federal money that is made available for grants to states may be used for payments of commitments made prior to Oct. 1, 1943 for similar services to the wives and infants of enlisted men of the first, second and third grades of the armed forces.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Alumni Research Foundation Created—The Alumni Research Foundation of the College of Medical Evangelists, Los Angeles, has been created by recent action of the board of directors of the Alumni Association and the board of trustees of the College of Medical Evangelists. The foundation is incorporated under the laws of California. While the primary purpose is to stimulate research, it may also accept gifts, grants, bequests and other forms of property to be used for charitable or educational purposes to aid the College of Medical Evangelists or advance medical science. At the first meeting of the board, August 8, the by-laws were ratified and Dr. Newton G. Evans, dean of the medical college, was elected president. The foundation consists of twelve to fifteen trustees.

COLORADO

Physician's Conviction Reversed by Supreme Court—Conviction of Dr. Philip L. Cobianchi, Denver, on the charge of performing an illegal operation, was reversed on August 3 by the Colorado Supreme Court, newspapers reported. It was stated that the evidence submitted "was insufficient to support the charge." Statements to the press indicated that the physician was convicted in 1942 on a charge of performing an illegal operation in 1941, the patient dying a few months later of peritonitis. The supreme court held that the pregnancy of the woman was not proved beyond doubt and testimony was that she had undergone an operation for appendicitis subsequent to the purported illegal operation. The newspaper reports stated that Dr. Cobianchi was sentenced to ten to twelve years for second degree murder. Newspaper accounts implied that the state will file a motion with the supreme court for a rehearing, the intimation being that the physician would be held on other charges still on file in the district court.

FLORIDA

Appointments in State Health Department—The appointment of Dr. Elmer J. Teagarden, Orlando, and Dr. Estella Lucille Johnson Marsh, Tallahassee, as directors of the state board of health's bureau of tuberculosis and bureau of maternal and child health, respectively, were reported on September 3. Dr. Teagarden has been serving as superintendent of the Morgan County Tuberculosis Sanatorium, Flint (Decatur P. O.), Ala., and succeeds Dr. Lynne E. Baker, Jacksonville, who resigned to enter private practice in Dayton, Ohio, last July. Dr. Marsh has been serving as chief physician at the Florida State College for Women, Tallahassee. Since the resignation of Dr. Robert C. Hood, Jacksonville, to enter private practice in Arlington, Va., the latter part of 1942, the bureau of maternal and child health has been in charge of Dr. Erwin F. Hoffman, director of the bureau of epidemiology.

ILLINOIS

Springfield Hospital Dedicated—The dedication of the new Memorial Hospital of Springfield took place September 26. The new building occupies a four block site and was erected at a cost of \$1,800,000. It has 285 beds and 50 bassinets. Of brick construction with concrete trimming, the building is composed of a central tower ten stories high and three wings seven stories high. At the dedication exercises the speakers included Lieut. Col. Charles W. Mayo, M. C., A. U. S., Dr. Morris Fishbein, Chicago, Editor of *THE JOURNAL*, on "What a Standardized Hospital Means to a Community", Dr. Malcolm T. MacEachern, Chicago, associate director of the American College of Surgeons, and Dr. Warren P. Morrill representing George Bugbee, executive secretary, American Hospital Association, Chicago. The *Illinois State Journal and Register* devoted a special section, September 26, to a review of the hospital's development and to features emphasizing the modern installations and accommodations. The section also carried pages of congratulatory messages from local physicians and commercial and other firms.

Chicago

Dr. Wynekoop Refused Request for Freedom—Dr. Alice L. Wynekoop, who is serving the tenth year of her sentence for conviction in the murder of her daughter-in-law, was denied a writ of habeas corpus by Federal Judge John P. Barnes, September 11, newspapers report. Dr. Wynekoop is serving a twenty-five year sentence in the women's prison at Dwight, Ill.

Dr. Elvehjem Lectures on Vitamin B Complex—Conrad A. Elvehjem, Ph. D., professor of biochemistry, University of Wisconsin, Madison, will address the annual joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine at the Palmer House on October 25. His subject will be "The Nutritional Significance of the Newer Members of the Vitamin B Complex."

Dr. Bachmeyer Receives Hospital Award—Dr. Arthur C. Bachmeyer, director and associate dean of the biology division of the University of Chicago Clinics, was presented with the American Hospital Association's Award for meritorious service to the hospital field during a meeting of the association on September 13. According to the inscription on the medal constituting the award, Dr. Bachmeyer was recognized as a "distinguished administrator and educator whose achievements have greatly advanced standards of treatment for patients and educational opportunities of lasting benefit to his fellow citizens."

KENTUCKY

Pediatric Conferences—On October 22 Drs. Philip F. Barbour, Louisville, and J. Garland Cherrill, consultant in pediatrics and consultant in surgery for children, respectively, for the state department of health, will conduct a pediatric conference in Corbin with the Whitley County Medical Society and the county health department. The program will include lectures and a clinic. The Muhlenberg County Medical Society will present a meeting on October 24 in Greenville, including a pediatric and obstetric clinic. A pediatric conference will be offered in Pineville, October 29, with Dr. Thomas M. Marks, Lexington, and Dr. Barbour in charge. Dr. Stanley S. Parks, Lexington, will be available as a consultant on obstetric patients. On November 12 a pediatric clinic will be conducted by Dr. Robert B. Warfield, Lexington, and Dr. Barbour in Paintsville, with Dr. A. J. Whitehouse, Lexington, as consultant in obstetric care. These various programs are being held throughout the state under the sponsorship of the county medical societies and the local health departments and under the general supervision of the state medical association and the state department of health.

MISSOURI

Health Board Resigns in Protest—Resignation of all members of the health board of Cape Girardeau in protest against failure of the city to follow its recommendations for more strict scrutiny of milk distribution and adoption of rules regulating health conditions in restaurants was accepted by the city council on August 2, newspapers report. A complete new board was appointed. Retiring board members included Drs. Carl A. W. Zimmermann, chairman, William F. Oechler, John H. Cochran and Raymond A. Ritter. Members of the new board are Drs. Gustav B. Schulz, Alexander E. Dalton, Hugh V. Ashley and Amos M. Murphy.

Report of State Cancer Hospital—A total of 3,374 patients have been examined in the Ellis Fischel State Cancer Hospital in Columbia from the time it opened in May 1940 through Feb. 28, 1943. There have been 13,225 clinic visits. These patients came from practically every county in the state with the exception of the St. Louis and Kansas City districts. The 931 physicians who sent patients to the hospital make up 48.6 per cent of all the physicians in the state, exclusive of Kansas City and St. Louis. One physician sent 49 patients. The average hospital stay per patient for 1942 was 18.5 days. The cost per patient day was \$6.30. About 40 per cent of the proved carcinoma cases and 25 per cent of the surgical pathologic cases were made up of skin lesions. Carcinoma of the rectum was a fairly common lesion, and of 81 consecutive cases 57, or 70 per cent, were resectable. According to a report published in the state medical journal by Dr. Lauren V. Ackerman, medical director and pathologist of the hospital, about 150 cases of carcinoma of the breast are seen yearly and fifty radical mastectomies are being done. Thus far there have been no operative deaths. The distribution of carcinoma at the state cancer hospital does not conform with accepted statistical studies, it was stated. To consider how many patients have true carcinoma, a thousand consecutive cases were analyzed, and malignant disease was present in only 52 per cent. Forty-three per

cent were proved definitely not to have carcinoma and 5 per cent could not be classified. Of the nonmalignant lesions, 341 were located in the uterus, skin, breast, stomach, rectum, penis and sigmoid. According to the state law all patients admitted to the hospital must be indigent, as certified by the patient's local county court, and a diagnosis of carcinoma or precancerous condition must be made by the referring physician from that county. All patients admitted to the hospital with malignant disease are treated from a curative or palliative approach. Patients with advanced disease which cannot be benefited by treatment are not admitted.

NEBRASKA

Mid-West Clinical Society—The Omaha Mid-West Clinical Society will hold its eleventh annual assembly at the Hotel Paxton, Omaha, October 25-29. Among the out of state speakers will be

Dr. Harold G. Wolff, New York: Headache Mechanisms.
Dr. Jennings C. Litzenberg, Minneapolis: Management of Occiput Posterior.
Dr. Frank R. Ober, Boston: Infantile Paralysis.
Dr. Raymond W. McNealy, Chicago: Advances in Blood Vessel Surgery.
Dr. Sara M. Jordan, Boston: Functional Diseases and the War.
Dr. Luther Emmett Holt, Jr., Baltimore: Unusual Cerebral Disorders in Childhood.
Dr. Sanford R. Gifford, Chicago: Treatment of Some Corneal Diseases.
Dr. Robert L. Sanders, Memphis, Tenn.: Complications of Duodenal Ulcer.
Dr. Tom D. Spies, Birmingham: Detailed Methods of Diagnosis and Therapy in Acute Nutritive Failure.
Col. Rexford L. Diveley, M. R. C.: The Work of the Rehabilitation Centers in England (tentative).
Dr. Cyrus E. Burford, St. Louis: Present Day Management of Carcinoma of the Prostate.
Major General Norman T. Kirk, surgeon general of the U. S. Army, Amputations (tentative).

There will be symposiums on peripheral vascular diseases, pneumonia and shock and special lecture courses. Thursday evening has been designated "Omaha-Douglas County Medical Society Night" and speakers will include Dr. Eben J. Carey, Milwaukee, on "Medical Education of Today and Its Effect on the Future of Medicine." The session will conclude Friday morning with a panel discussion on "War Medicine and Surgery" with Capt. Henry L. Dollard (MC), U. S. Navy, acting as chairman. Other speakers will be

Capt. Emil J. Steller (MC), U. S. Navy: Aviation Medicine and Research.
Comdr. John F. Luten (MC), U. S. Navy: Treatment of War Casualties Including Shock, Plasma and Sulfonamides.
Lieut. Comdr. Franklin C. Southworth, Jr. (MC), U. S. Naval Reserve: Neuropsychiatric Screening of Recruits at a Naval Training Station.
Lieut. Comdr. Charles W. McLaughlin, Jr. (MC), U. S. Naval Reserve: Corrective Surgery.
Lieut. Comdr. Joseph M. Picciochi (MC), U. S. Navy: 25,000 Photo Radiographs of the Chests of Naval Recruits.

NEW HAMPSHIRE

Dr. Mary Atchison Named Acting State Health Officer—Dr. Mary M. Atchison, formerly director of the divisions of maternal and child health and of crippled children's services, New Hampshire State Board of Health, Concord, and recently acting deputy secretary of the state board, has been appointed acting state health officer. Dr. Atchison fills the vacancy that occurred when Dr. Alfred L. Frechette was granted a leave of absence as secretary of the board to engage in war rehabilitation work under the auspices of the U. S. Public Health Service (THE JOURNAL, July 17, p. 821).

The Mayo Lectures—Capt. Winchell M. Craig (MC), U. S. Naval Reserve, chief surgeon, Naval Hospital, Naval Medical Center, Bethesda, Md., will deliver the W. J. and C. H. Mayo Memorial Lecture at Dartmouth Medical School, Hanover, November 5. The title of his address will be "Warriors Against Disease." The lecture was established in 1942 by Dr. and Mrs. Waltman Walters, Rochester, Minn., as "a stimulating factor in interesting men in medicine and surgery and, particularly, to call attention to the accomplishments of Drs. W. J. and C. H. Mayo in these fields."

NEW JERSEY

Schireson's License Restored—The New Jersey state court of pardons and appeals set aside on September 24 the action of the state board of medical examiners in revoking the license of Dr. Henry J. Schireson, Merchantville, plastic surgeon, according to the New York Times. The errors court in an opinion written by Chief Justice Thomas J. Brogan held that although Schireson at the time his license was revoked, April 15, 1942, was serving a federal penitentiary sentence for perjury, false swearing and concealing assets in federal bankruptcy proceedings, the physician had not been convicted of a crime

the report stated. Schireson was once involved in a notorious damage suit in which he was ordered to pay the complainant \$40,000. Since then his licenses to practice medicine in various states have been revoked.

NEW YORK

New Building at Lederle—A five story and basement reinforced concrete and brick factory and laboratory building has been started at the Lederle Laboratories, Inc., Pearl River. The expansion is in accordance with recently approved priorities from the War Production Board to meet the required need of penicillin.

Personal—Dr. William T. Shanahan has retired as medical superintendent of the Craig Colony, Sonoma, effective October 1. He plans to live in Eggertsville. Dr. Shanahan has been medical superintendent for thirty-two of the forty-seven years with which he has been connected with Craig Colony, an institution for the epileptic.

New York City

Tuberculosis Package Library—The Queensboro Tuberculosis and Health Association launched a library health package service recently to supply, free of charge, new books, pamphlets and research studies on tuberculosis to libraries throughout the borough.

Louis Livingston Seaman Fund—The New York Academy of Medicine announced that the Louis Livingston Seaman Fund of \$1,000 is now available. Applications will be received either from institutions or from individuals up to November 1. The fund will be expended only in grants in aid for investigation or scholarships for research in bacteriology or sanitary science and may be made for securing of technical help, aid in publishing original work and the purchase of necessary books or apparatus. The fund was made possible by the terms of the will of the late Dr. Louis Livingston Seaman. Additional information may be obtained from Dr. Wilson G. Smillie, chairman of the fund, 1300 York Avenue.

Grant for Undergraduate Psychiatric Education—The Commonwealth Fund has awarded a six year grant to the Long Island College of Medicine, Brooklyn, for the development of undergraduate psychiatric education, beginning with the sum of \$20,450 toward the current budget. The aims of the projected program are to train the medical student to understand and recognize the personal and environmental factors that often contribute to ill health, both physical and mental; the impact of somatic illness on personality, and the diagnosis and treatment of psychologic problems long before these grow into fully developed psychiatric disorders as one of the responsibilities of physicians in the mental hygiene area of public health and hygiene.

Opinion Reverses Revocation of Compensation License

—In a decision handed down on September 8 Supreme Court Justice Carroll G. Walter voided an action of the New York State Industrial Commission in revoking the authority of Dr. Leo S. Sacharoff to treat workmen's compensation cases. Dr. Sacharoff lost his license to care for this work on August 11 by order of the state labor department because of fee splitting and other misconduct (THE JOURNAL, September 4, p. 46). The physician's right to treat such cases was rescinded as a result of the Moreland commission's investigation into the administration of the workmen's compensation act. In annulling the revocation action Justice Walter held that the commissioner had no legal right to hold a hearing and that the charges of professional misconduct first should have been heard by the county medical society having jurisdiction, according to the New York Times. In the event that the medical body sustained the charges Justice Walter pointed out in his decision, the industrial commissioner might then act to revoke the physician's right to administer to compensation cases.

NORTH CAROLINA

Dr. Ferguson Named Professor of Physiology—Dr. John H. Ferguson, assistant professor of pharmacology, University of Michigan Medical School, Ann Arbor, has been appointed professor and head of the department of physiology at the University of North Carolina School of Medicine, Chapel Hill. Dr. Ferguson graduated at Harvard Medical School, Boston, in 1928.

New Building for Health Unit—A new two story building has been erected in Wilmington for the consolidated board of health of New Hanover County and the city of Wilmington. Most of the lower floor is given to the clinics, examination and treatment rooms and office for the malaria control staff and the fluoroscope room. The second floor is devoted to

administrative facilities. The general public health laboratory and the venereal disease laboratory will remain in the court house. The unit was constructed by the Federal Works Administration, which leased the lot and constructed the building at a cost of about \$30,000. Ultimately the lease will be terminated and the lot and building will be turned over to the county.

OHIO

Industrial Funds Distributed Reach New High—The state industrial commission disbursed \$4,243,069.09 for medical services to injured Ohio workers during 1942, according to a recent report. The figure, which established a new record for this expenditure, includes a relatively small amount for essential dental services. Other expenditures during the year included \$1,760,898.69 for hospital care and nursing, \$133,104.41 for funeral expenses and \$86,644.34 for court costs, a total of \$6,223,733.53. These amounts include payments covering injuries to private and public employees as well as similar costs on occupational disease claims and are in addition to death awards and compensation to injured employees. Comparative figures for 1941 were \$3,322,792.06 for medical services, \$1,258,095.36 for hospital care and nursing, \$122,290.05 for funeral expenses and \$73,998.89 for court costs, a total of \$4,777,177.26. The number of claims filed during 1942 was 320,793, also a record for the thirty-one year history of the Workmen's Compensation Fund. There were 286,010 claims filed in 1941, the previous peak year. The total for 1932 was 130,099. "Medical only" claims, involving payment for physicians' services but no compensation to the claimant for loss of time, numbered 256,600 in 1942, or 80 per cent of all claims filed, compared with 79.5 per cent in 1941. Average expense of "medical only" claims decreased from \$8.03 in 1941 to \$7.69 in 1942.

OKLAHOMA

Thirteenth Annual Clinic Society Conference—The Oklahoma City Clinical Society will hold its thirteenth annual conference at the Biltmore Hotel, Oklahoma City, October 18-21. The guest speakers will be:

- Dr. Louis E. Phaneuf, Boston, Evolution Indications and Contra-indications of Cesarean Section
- Dr. Abraham H. Aaron, Buffalo, The Management of Peptic Ulcer from the Standpoint of the Active Practitioner
- Dr. Charles T. Wav, Cleveland, Clinical Problems Involving Water, Protein and Solute Replacement
- Dr. Cravson L. Carroll, St. Louis, The Clinical Management of Pyuria
- Dr. Robert D. Schrock, Omaha, Fractures at the Knee Joint
- Dr. Vilray P. Blair, St. Louis, The Importance of Proper Early Treatment of Face Injuries
- Dr. John A. Toomey, Cleveland, Chemotherapy in Acute Infectious and Contagious Diseases
- Dr. Leroy A. Calkins, Kansas City, Mo., I Haven't Been the Same Since Mary Was Born (a diagnostic problem)
- Dr. Theodore J. Dimitry, New Orleans, The Modern Trend in the Treatment of Eye Diseases
- Dr. Thomas G. Orr, Kansas City, Mo., Analysis of Gallbladder Cases.
- Dr. George B. Eusterman, Rochester, Minn., "When Johnnie Comes Marching Home" (diagnostic and therapeutic problems facing the practitioner and how to meet them)
- Dr. Harry E. Mock, Chicago, Skull Fractures and Brain Injuries (a review of the management of 7,031 cases treated throughout the United States)
- Dr. Louis A. Buie, Rochester, Minn., Lesion of the Terminal Portion of the Colon
- Col. Franklin G. Ebaugh, M. C. A. U. S., Basic Neuropsychiatric Induction Examination Problem (How the General Medical Profession Can Help)
- Dr. W. Likely Simpson, Memphis, Tenn., Diagnosis and Treatment of Sinusitis
- Dr. Clinton W. Lane, St. Louis, Contact Dermatitis with Particular Reference to Occupational Dermatitis

The program will also include round table luncheons and banquets.

OREGON

Life Members of State Society—At a meeting of the council of the Oregon State Medical Society, August 14, life membership was voted to Drs. Charles T. Sweeney, Medford, George Norman Pease, Portland, William T. Johnson, Corvallis, and the late Wilson Johnston, Portland.

Dr. Weeks Observes Ninetieth Anniversary—Dr. John E. Weeks, professor emeritus of ophthalmology, New York University College of Medicine, New York, celebrated his ninetyeth birthday recently. Dr. Weeks was for many years professor of ophthalmology at University and Bellevue Hospital Medical College, New York, becoming emeritus professor in 1920. He was chairman of the Section on Ophthalmology of the American Medical Association in 1902.

SOUTH CAROLINA

Dr. Routh Resigns from State Board—Dr. Foster M. Routh, Columbia, for many years a member of the executive committee of the state board of health and chairman in 1935, resigned as a member of the board on August 18 because of

ill health. Dr. Robert B. Durham, Columbia, has been named to succeed Dr. Routh, who will continue his work as resident physician at the University of South Carolina, Columbia. Dr. Routh graduated at the Medical College of the State of South Carolina, Charleston, in 1910.

TENNESSEE

New State Health Officer—Dr. Robert H. Hutcheson, Nashville, assistant commissioner and one time superintendent of the Williamson County Health Unit, has been appointed state commissioner of public health. He succeeds Dr. Wilson C. Williams, Nashville, who accepted a commission as lieutenant colonel in the Medical Corps of the Army and who has been ordered to active duty. Dr. Hutcheson graduated at the University of Tennessee College of Medicine, Memphis, in 1930.

UTAH

State Medical Election—Dr. Ezekiel R. Dumke, Ogden, was named president-elect of the Utah State Medical Association at its annual session in Salt Lake City and Dr. James P. Kerby, Salt Lake City, was inducted into the presidency. Other officers include Drs. Wilford Woolf, Provo, LaVelle H. Merrill, Spring Canyon, and Mildred N. Nelson, Salt Lake City, vice presidents, Dr. David G. Edmunds, Salt Lake City, secretary, and Dr. Edward S. Pomeroy, Salt Lake City, treasurer. The next annual session will be held in Salt Lake City sometime in August 1944.

WISCONSIN

Physicians Honored—The Waukesha County Medical Society held a banquet recently at the Draper Hall, Oconomowoc, to honor Drs. Michael R. Wilkinson, Oconomowoc, Byron M. Caples, Waukesha, and Francis J. Donnelly, North Lake, in recognition of their completion of fifty years in the practice of medicine, each was awarded an honorary life membership in the county society.

Will Provides for Hospital—The estate of the late Dr. William H. Finney will eventually be available for the erection and maintenance of the William Finney Memorial Hospital in Clintonville under the provisions of the physician's will filed on July 30. The estate is estimated to be about \$400,000 and will be divided among the beneficiaries during their lifetime. On their deaths one half is to go to the city of Clintonville to build and equip a modern hospital to bear his name.

GENERAL

Examination in Otolaryngology—The American Board of Otolaryngology announces that it will conduct an examination in Los Angeles, February 2-5, provided fifty applicants are accepted.

New Executive Director of the Russian War Relief—Fred Myers, public relations director of Russian War Relief, New York, since its inception in 1941, has been appointed executive director to succeed Arch Mandel, who resigned to join Community Chest and Councils, Inc.

Meeting of Industrial Hygiene Foundation—The eighth annual meeting of the Industrial Hygiene Foundation will be held at the Mellon Institute, Pittsburgh, November 10-11. At a meeting of the board of trustees on August 25 it was decided to hold the meeting as a help in maintaining healthful conditions in war plants, which in turn helps maintain manpower.

Casselberry Award—The American Laryngological Association announced that a sum of money has accrued from the Casselberry Fund to insure a prize being offered in 1944 for original investigation in the art and science of laryngology or rhinology. Theses must reach the secretary, Dr. Arthur W. Proetz, 1010 Beaumont Building, St. Louis 8, before March 1, 1944.

Examinations for Medical Technologists—The Registry of Medical Technologists of the American Society of Clinical Pathologists announces that examinations of applicants for registration will be conducted in various parts of the United States and Canada on October 29. Additional information may be obtained from Dr. Lall G. Montgomery, chairman of the Board of Registry of Medical Technologists, Ball Memorial Hospital, Muncie, Ind.

Society News—The National Association for Nursery Education will hold its tenth biennial meeting at the Hotel Statler in Boston, October 22-25. There will be a conference on "The Community Serves the Child in War and Peace" and one session on "The World Picture and the Implications for Education." Other sessions will consist of study groups which will

discuss child development problems based on actual case histories of various communities. Durr-Louise Cockrell, state social security commission, Jefferson City, Mo., is the secretary of the National Association for Nursery Education.

Brazilian Physician Lectures on Tropical Medicine—At the invitation of the Pan American Sanitary Bureau Dr Olympio da Fonseca Jr, medical director for Brazil for E R Squibb and Sons Inter-American Corporation, has arrived in the United States for an extensive lecture tour before the faculties and students of medical schools throughout the country, discussing tropical medicine with special emphasis on malaria, African sleeping sickness, amebic dysentery and ringworm infection. Dr da Fonseca is a professor at the National School of Medicine of the University of Brazil and is connected with the Medical Center of Ceara and the department of health of that state.

Special Society Elections—Dr Fuller Albright, Boston, is president of the American Society for Clinical Investigation for 1943-1944, and Dr Wesley W Spink, Minneapolis is secretary. Dr H Marshall Taylor, Jacksonville, Fla., is president of the American Laryngological, Rhinological and Otolological Society. The society did not have an annual meeting this year, and the council promoted Dr Taylor from president-elect to president. He succeeds Dr James G Dwyer, New York, who resigned as president. Vice presidents appointed for the ensuing year are Drs Westley M Hunt, New York, William C Warren Jr, Atlanta Ga., Fred W Dixon, Cleveland, and Simon Jesberg, Los Angeles.

Profession Industry Follow-Up Conference—The second Profession Industry Follow-Up on the National Conference on Planning for War and Postwar Medical Services was held at the Waldorf-Astoria, New York, October 4, under the auspices of the National Physicians Committee for the Extension of Medical Service. Among the speakers on the program were Dr Roger I Lee, Boston, on 'Medicine's Position and Policy,' Raymond Moley, Ph D, New York, 'The Cult of the Uncommon Man,' and Dr Morris Fishbein, Chicago, Editor of THE JOURNAL, 'Medical Planning and Progress.' Dr Edward H Cary, Dallas Texas, was chairman at the meeting, at which the financial report and reports covering the educational efforts and the profession-industry cooperation were reviewed.

Remington Award Goes to Dr Fischelis—Robert P Fischelis, Ph M, Trenton, N J., chairman of the council of the American Pharmaceutical Association, has been awarded the 1943 Remington Medal, conferred by the New York Branch of the American Pharmaceutical Association. Dr Fischelis, who is secretary and chief chemist of the Board of Pharmacy of the State of New Jersey and chief of the chemicals, drugs and health supplies branch of the Office of Civilian Requirements of the War Production Board, was presented with the medal for his many contributions to the advancement of pharmacy, including his literary, scientific and organizational activities. He has recently been reappointed as the pharmacist member of the state board of health of New Jersey for a term of four years. The Remington Medal is awarded annually "to the man or woman who has done most for American pharmacy during the preceding year or during a longer period of outstanding activity and of fruitful achievement."

Pacific Coast Society of Obstetrics and Gynecology—The annual meeting of the Pacific Coast Society of Obstetrics and Gynecology will be held in San Francisco, November 4-5, under the presidency of Dr C Frederic Fluhmann, San Francisco. Among the speakers will be

Dr Howard C Stearns, Portland Ore, Extraperitoneal Cesarean Section: Analysis of a Short Series.
Dr Ernest W Page, Berkeley Calif, The Metabolism of Histidine During Pregnancy.
Dr Karl L Schaupp, San Francisco, Unusual Case of Abdominal Pregnancy.
Dr Goodrich C Schauffler, Portland Ore, Women in Heavy War Industries: Gynecologic and Obstetric Aspects.
Dr Albert V Pettit, San Francisco, The Closure of Lower Abdominal Incisions.
Dr Frederic M Loomis, Sausalito Calif, De Senectute: The Good That We Would We Do Not the Evil That We Would Not, That We Do.
Carl G Hartman, Ph D, Baltimore, Securing Monkey and Human Embryos.

Another feature of the meeting will be a symposium on 'Erythroblastosis Fetalis.' Dr Herbert M Evans, Berkeley, and Charles H Danforth, Ph D, Stanford University, will discuss Story of Implantation in Primates.

Association of American Medical Colleges—The fifty-fourth annual meeting of the Association of American Medical Colleges will be held at the Hotel Statler, Cleveland, October 25-27, under the presidency of Dr Waller S Leathers, dean

of the Vanderbilt University School of Medicine, Nashville. Speakers on the program will include

Dr Henry E Meleney, New York, Tropical Medicine Fellowships of the John and Mary R Markle Foundation.
Brig Gen George F Lull and Col Francis M Fitts, M C, U S Army, The Army Specialized Training Program.
Comdr Bartholomew W Hogan, (MC), U S Navy, The Navy V 12 Program.
Dr Victor E Johnson, Secretary Council on Medical Education and Hospitals, American Medical Association, Chicago, Effect of the Accelerated Program of Medical Schools on the Curriculum: Faculty and Students.
Dr Willard C Rappleye, New York, Postwar Planning for Medical Education.
Dr Lester J Evans, New York, The Place of the Small Community Hospital in Postwar Medical Education.
Dr Allan Gregg, New York, Can Excellence be Learned?
M B Harrower-Erickson, Madison, Wis, The Rorschach Test.
Philip A Shaffer, Ph D, St Louis, A Recipe for a Medical School.
Dr Carey P McCord, Detroit, Some Aspects of Medical Education in Industrial Health Conservation.
Dr Joseph T Wearn, Cleveland, Present Methods of Medical Teaching.
Dr Carl J Wiggers, Cleveland, Correlation of Physiology Instruction with War Problems.

Aero Medical Association Meeting—The fifteenth annual meeting of the Aero Medical Association of the United States will be held in the Netherland Plaza Hotel, Cincinnati, October 26-27. Among the speakers will be

Dr Albert J Herbolzheimer, Washington D C, The Role of Extraocular Muscles in the Aviation Physical Examination.
Dr William J Holmes, Honolulu, Hawaii, Night Vision, Fundamental Considerations.
Dr Whitman C McConnell and Dr Whitman H McConnell, St Petersburg, Fla, Neuropsychiatric Aspects of the Civilian Pilot Examination.
Dr Edgar E Poos, Detroit, Allergy of the Upper Respiratory Tract.
Drs Ralph Bretney Miller, Washington D C, Emerson Day, Baltimore, LeMoyn White, Walpole N H, and John M Baldwin, New York, Medical Problems in an Overseas Air Transport Service.
Lieut. Comdr Marion M Kalez, (MC), U S Naval Reserve, Observations on the Odd and Strange in the South Pacific.
Brig Gen Eugen I G Reinartz, M C, U S Army, Observations on Aviation Medicine in the European and African Zones.
Lieut. Col Richard L Meiling, M R C, Air Evacuation of Casualties.
Dr Alberto Hurtado, Lima, Peru, Comparative Studies Among Flight Personnel and Residents in the Peruvian Andes.
Major Herman S Wigodsky, M R C, Army, Air Forces Altitude Training Program.
Lieut. Comdr Earle E Metcalfe, (MC), U S Navy, Navy Low Pressure Chamber Indictorial Program.
Lieut. Comdr John W Jenkins, HV (S), U S Naval Reserve, Prediction of Flight Training Performance by Biographic Data.
Major Arthur B Welton, A C A U S, Selection of Pilots by Means of Psychometric Tests.
Lieut. Comdr Ashton Graybill, (MC), U S Naval Reserve, Fatigue as a Problem in Aviation Training.
Squadron Leader K Evelyn, R C A F, Ottawa Ont., Night Vision.
Capt. George M Hass, M C A U S, Aircraft Injuries.
Major F G Hall, A C A U S, and Alice Brues, Ph D, Dayton Ohio, Simultaneous Measurements of Pulse Rate, Pulmonary Ventilation and Inspiratory Pressure.
Comdr Chalmers L Gemmill, (MC), U S Naval Reserve, The Testing of Oxygen Equipment.
Col Gustave E Ledfors, M C U S Army, Progressive Changes in Medical Field Equipment.
Capt. Bertram Groesbeck Jr, (MC), U S Navy, Modern Trends in the Teaching of Aviation Medicine.
Lieut. Comdr Herman J Sternstein, (MC), U S Naval Reserve, The Effect of Nasal Ventilation on Tubal Equalizing Efficiency in Flying Personnel.
Air Commodore J W Tice, R C A F, Ottawa Ont., Current Medical Developments in the Royal Air Forces.
Capt. John C Adams, (MC), U S Navy, Developments in Naval Aviation Medicine.
Brig Gen David N W Grant, M C U S Army, Medical Service with the Army Air Forces.
Dr William R Stovall, Washington D C, Trends in Civil Aviation Medicine.
Lieut. Albert Damon, A C A U S, The Importance of Human Sizing Standards in Aviation.
Capt. Alvin M Caham, M C A U S, The Improved Methods of Resuscitation.
Lieut. Col William R Lovelace II, M R C, Aviation Medical Research in Aircraft at High Altitudes.

Another feature of the meeting will be a civil aeronautics medical forum, Wednesday, with Dr Stovall in charge.

Government Services

Dr Wilder Resigns from Food Administration

Dr Russell M Wilder has resigned as chief of the civilian food requirements branch of the Food Distribution Administration to return to his activities at the Mayo Clinic, Rochester, Minn. He will continue to serve as medical adviser to the administration. According to the Washington Post, September 19, Norman Leon Gold, Silver Spring, Md., assistant to the administrator of agricultural marketing administration, U S Department of Agriculture, will become acting chief of the branch.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug 20, 1943

Diphtheria Problems

The Fever Group of the Society of Medical Officers of Health has issued an important memorandum on diphtheria problems. Artificial immunization has much reduced the incidence of the disease and minimized its severity. But the variation in the classic signs has increased difficulty in diagnosis, and without evidence of complete immunization, as shown by a negative Schick test, immunity cannot be safely assumed. Further, diphtheria may occur, though rarely, in a Schick negative person. There is a tendency to place undue reliance on the swab examination. The bacteriologist cannot distinguish between active diphtheria and the carrier state. Doubtful cases must be examined for hemolytic streptococci and Vincent's organisms. Antitoxin must be given at the earliest possible moment, normally in a hospital, as a maximum dose is advisable rather than a series of smaller ones. Only when there has been delay or is likely to be delay should the physician give antitoxin. Antitoxin need not be withheld for fear of severe reactions. The modern protein digested concentrated product rarely gives rise to serum sickness or related phenomena.

In case of doubt continuous observation is necessary and the patient should be sent to a hospital. The procedure today in many hospitals is as follows: 1 When delay in administering antitoxin would be dangerous it should be given immediately before any bacteriologic investigation. 2 When delay of six hours would not be dangerous the Schick test should be performed, swabs taken and antitoxin given six hours later. 3 When delay of one day or more would not be dangerous, antitoxin should be deferred until the results are known. In no case should reliance be placed on the swab alone, every suspected patient when first seen must either receive antitoxin and have the throat or nose swabbed or must be given the Schick test and have the throat or nose swabbed. When there is doubt, antitoxin should be given.

A person whose throat or nose is swabbed because of contact with a diphtheria patient but who has no symptoms must not be classed as having diphtheria, notified or sent to a hospital merely because of a positive finding. Routine swabbing of contacts, except in special circumstances, such as institutional outbreaks, is to be deprecated and should at any rate be restricted to those showing an unhealthy condition of the nasal or pharyngeal mucosa. The waste of time, effort and material is not justified by the occasional discovery of a healthy carrier.

Blind Factory Workers

The Ministry of Labor and National Service has a list of more than eighty occupations in which blind persons have been placed. During the past twelve months over 700 blind men and women have been given jobs formerly done by sighted workers. It is claimed for the blind that they often show unusual powers of concentration and have supersensitive hearing and touch. Keeness of hearing is known to enable a blind operative to detect a blunted cutter or a slight irregularity in the running of a machine which another person would miss. For the most part the blind are given simple process work for which little, if any, preliminary training is needed. But a good many have proved capable of doing intricate assembly work.

What is the accident risk among blind workers? The general experience of blind welfare officers is that the blind factory worker is more than ordinarily careful and that the risk of

accident is negligible. The chief insurance companies do not refuse blind persons, nor do they increase the premium for a blind worker provided the employer can assure them that the work is within the worker's capacity.

On the staff of the Ministry of Labor there are eleven blind shorthand typists and fifty blind telephonists. Many men blinded in the last war are still capable of work. Some months ago the works manager of a London factory inquired urgently of the employment exchange for four men of a particular type. "I must have some one," he said, "for it is an important job though simple. I could do it with my eyes shut." There was no one on the register and the exchange manager suggested that he might engage some blind men. The trial was so successful that a week later he engaged four more.

A New "Ophthalmic" Camera

Wing Commander Harold Pearce, director of photography at the Royal Canadian Force headquarters, has been elected a fellow of the Royal Photographic Society of Great Britain for his part in the invention of a new "ophthalmic" camera developed by that force for studying vitamin deficiencies revealed by the eye. As a result of studies with the camera the medical officers of the force have shown that airmen who finish flights rubbing their eyes, which feel tired and watery, often suffer from a lack of vitamin B, or riboflavin. In order to inspect men's eyes and obtain a permanent record of examinations, a special camera was designed by Wing Commander Pearce and Flying Officer M J Sym, an authority on microscopic camera work at the University of Manitoba, who worked out the technical details for a 2,000,000 watt bulb which flashes for a split second into the eye camera.

British Medical Aid for China

The British Red Cross Society sent last year a hospital unit of twenty-one persons—doctors and nurses—for service in China. It was under the direction of Dr W S Flowers and established a base hospital at Changsha, Hunan, where sick and wounded, both civilian and military, are being treated and excellent work is being done. In the medical press Lord Horder states that an appeal has been received by the War Organization of the British Red Cross for reinforcements. It is stated to be especially desirable that applicants should have a knowledge of the Chinese language or a background of Chinese experience. Further particulars may be obtained from Dr H Gordon Thompson, War Organization of the British Red Cross, 14 Grosvenor Crescent, London, SW 1.

C J S Thompson, Medical Historian and Curator

The death of C J S Thompson, Ph D, has removed an important figure from the medical world, though he was not a member of the medical profession. Born in 1862, he devoted his early days to the study and practice of chemistry and pharmacy with special attention to history. In 1900 he was appointed curator of the projected Wellcome Historical Medical Museum. Until his retirement in 1926 he threw all his energy into gathering and organizing that unrivaled collection. In the course of his work he traveled extensively in Europe. In 1927 the Royal College of Surgeons appointed him honorary curator of the historical section of its museum. He worked at this until the collection was almost completely destroyed by German bombing in 1941. Fortunately he had then completed his great work "The History and Evolution of Surgical Instruments," which was published last year in New York and which is a permanent record of some of the most important exhibits of the museum. His lifelong study of toxicology gave rise to "Poisons and Poisoners," a standard reference work on the history of poisoning. Other important works from his pen were "The Art of the Apothecary" (1929) and "The Secrets of Magic" (1927).

BUENOS AIRES

(From Our Regular Correspondent)

Sept 1, 1943

Mortality in Laryngectomy

Drs Robert C. Ferrari and Edgar Flemming recently read an article before the Argentine Academy of Surgery on the surgical results of laryngectomy in 193 cases which were classified in four different groups on the basis of mortality rates. 1 Endolaryngeal cancer with neither tracheal obstruction nor complications and associated diseases in young and strong patients. Twenty-four cases were included in this group, and there was no surgical mortality. 2 Endolaryngeal cancer with tracheal obstruction, with or without previous tracheotomy, including cancer of the epiglottis and cancer with involvement of the pharyngeal wall. Patients in this group were between 50 and 60 years of age, in good general condition. One hundred and ten cases were included in this category. The mortality was 37 per cent. 3 Cancer of the epiglottis with involvement of the tongue and laryngeal cancer with destruction of the larynx and involvement of the surrounding soft tissues. Moderate doses of x-rays were given. The patients were over 60 years of age, in poor general condition. Forty-nine patients were classified in this group. Twelve patients died. 4 Cancer heavily irradiated, including laryngeal carcinoma in patients with associated diseases such as diabetes, nephrosclerosis and chronic pulmonary or cardiac conditions. Nine cases fell in this group. The surgical mortality was 45 per cent.

Public Health in Uruguay

Dr Mussio Fourmer, minister of public health in Uruguay, has published an extensive study on the activities of this service in the last four years. Several departments were considerably improved. The development of the Center of Prophylaxis and Study of Hydatid Disease deserves special mention because of the importance of this disease in Uruguay. The intensification of the antituberculosis campaign has led to an increase of 130 per cent in the number of beds reserved for tuberculous patients (from 1,555 beds in 1937 to 2,437 beds in 1942). The newly created service for mass radiologic chest survey has examined 50,000 persons in two years. Eight new tuberculosis sanatoriums and several outpatient clinics were established. There are large new pavilions for patients with mental disease with a capacity of 1,000 beds in the Colonia Bernardo Etchepare. The crusade against trachoma is intensified throughout the country. The Department of Industrial Hygiene, the Instituto de Otorrhopedia y Traumatologia, the Centro de Protección al Cardíaco and four polyclinics of mental hygiene were also established. A total of 7,500,000 pesos was spent in these improvements and new departments. The Department of Public Health had a total of 12,777 beds available in 1942. The Vital Statistics Department of Public Health was reorganized and modernized. A new Department of Public Help to the Poor was recently created, it is mostly concerned with carrying on investigations in order that the poor may receive necessary medical care. The Dorrego laboratory was also created recently for the preparation of drugs for the hospitals of the country at moderate cost.

Allergy

Drs Guido Ruiz Moreno, Miguel A. Solari and Alois A. Bachmann studied 733 clinical reports of patients who were cared for in the Instituto de Investigaciones Físicas Aplicadas a la Patología Humana, a department of the National Academy of Medicine of Buenos Aires. The most frequent allergic syndromes were asthma (431 cases), rhinopathies (360 cases), and urticaria (41 cases). The best therapeutic results were obtained in allergic rhinopathies, 69.5 per cent of allergic rhinopathies and 62.1 per cent of allergic asthma were cured. The specific

therapy failed in 18 per cent of the cases of rhinopathy and in 4.5 per cent of those of asthma. There were 62.9 per cent multiple sensitivities and 37.1 per cent single sensitivities. Cutaneous sensitivity was not an index of clinical sensitivity. The greatest frequency of the latter is that which is produced by inhaled substances, 50 per cent. Food is the cause of reaction in 29.8 per cent of the cases, pollen in 11.7 per cent and bacteria and mushrooms in 8.5 per cent. House dust and feather dust were the causes in a large number of instances. Streptococci and staphylococci were the cause in about the same number of instances. Aspergillus in the group of mushroom sensitivities and Ambrosia tenuifolia in that of pollens followed, but the gramineous plants were the most frequent in their groups. Allergic foods in order of frequency were milk, eggs, wheat, fish and pork. It was also found that peas, lentils, rice and beef have allergenic properties. Heredity appeared to be a factor in 69.1 per cent of the cases. Rhinopathies complicated by asthma were observed in 51.9 per cent of the cases. Asthma occurred in about the same number of women as in men. Rhinopathies, urticaria, eczema, headache and conjunctival diseases occurred more frequently in women than in men. Plurisyndromal allergy was rare. Gastrointestinal syndromes were frequently observed in men. The allergic syndromes appeared most often between the ages of 20 and 29 years and less frequently in these under 9 years.

New Medical Journals

Revista de la Asociación Argentina de Dietología is the name of a new medical journal which has recently appeared here. It is the organ of the Instituto Nacional de la Nutrición, Buenos Aires. Dr Pedro Escudero, head of the institute, is the editor. The first issue, of 84 pages, contains articles on determination of the effect of potassium bromate on the content of thiamine (vitamin B₁) in bread, staphylococci as cause of food poisoning, food value of araucaria cones, postwar formulas for feeding children, chemical constitution and vitamins in dehydrated eggs, and chemical constitution of food prepared in Argentina (according to results of analysis carried on in the Instituto Nacional de la Nutrición).

Revista de Psicoanálisis is the official organ of the Argentina Association of Psychoanalysis, which is a branch of the International Association of Psychoanalysis. Its purpose is to make available in Spanish the foreign psychoanalytic literature. The editorial staff includes Drs C. E. Carcamo, G. F. Hardoy, A. Garma, M. Langer, E. P. Riviere and A. Rascovsky. The publication has the support of the Francisco Muñoz Foundation.

Pan American Week on Neuropsychiatry

The Pan American Neuropsychiatric Week, postponed from 1942 to this year, will be held in the Faculty of Medicine of Buenos Aires, November 7 to 13. Dr Nerio Rojas will preside. The following physicians have been appointed as official speakers: Drs Arturo Vnado of Santiago, Gonzalo Bosch of Buenos Aires, Honorio Delgado of Lima, Osvaldo Loudet of Buenos Aires, A. Austregesilo and Fortes Ary Borges of Rio de Janeiro, Vicente Dimitri of Buenos Aires, Camilo Payssé of Montevideo, Jose Belbey of Buenos Aires, Samuel Ramirez Moreno of Mexico, Nerio Rojas of Buenos Aires, Julio Endara of Quito and A. C. Pacheco e Silva of São Paulo. The following official topics will be discussed: "Presenile Psychoses," "Abnormal Personality," "Nonsuppurated Acute Encephalitis," "Conceptions on Schizophrenia," "Psychopathology of Hunger in Legal Medicine" and "Neuropsychiatry of Infections in Latin America."

Brief Items

The Sociedad Argentina de Historia de la Medicina honored the memory of Vesalio on the occasion of the fourth centenary since his famous investigations.

Deaths

James Franklin Allen ☉ Pittsburgh, Howard University College of Medicine Washington, D. C., 1902, University of Pennsylvania Department of Medicine, Philadelphia, 1903, aged 70, died in the Allegheny General Hospital, July 27, of carcinoma of the stomach

Thomas D. Armistead, Roanoke, Va., Medical College of Virginia, Richmond, 1898, member of the Medical Society of Virginia, formerly city physician and coroner, took part in the establishment of the Burrell Memorial Hospital, where for many years he was on the advisory board, served on the staff and for many years a member of the board of the Roanoke Hospital, aged 69, died, August 6, of carcinoma

Clarence Edmund Bair, Braddock, Pa., Western Pennsylvania Medical College, Pittsburgh, 1900, aged 71, died, August 3, of valvular heart disease

Christo Petroff Balabanoff, Tacoma, Wash., University of the City of New York Medical Department, 1888, aged 84, died, August 6

Margaret Banta, Los Angeles, American Medical Missionary College, Battle Creek, Mich., and Chicago, 1903, aged 76, died, July 20, of uremia pyonephrosis, cystitis and pernicious anemia

George Richard Beddow, Pine Grove, Pa., Temple University School of Medicine, Philadelphia, 1934, member of the Medical Society of the State of Pennsylvania, served for many years as deputy coroner of Pine Grove, aged 35, on the associate staff of the Pottsville Hospital, where he died, August 10, of hypertensive cardiorenal disease

Charles Edwin Beecher ☉ Knoxville, Ill., Northwestern University Medical School, Chicago, 1905, served on the staffs of the Cottage Hospital and St. Mary's Hospital, Galesburg, aged 63, died, July 14, of streptococcal sepsis

Jesse Wilmington Bell ☉ Walhalla, S. C., Bellevue Hospital Medical College, New York, 1892, surgeon for the Southern Railroad, aged 76, died, July 14, of heart disease

Sherman Grant Berry, San Diego, Calif., Marion-Sims College of Medicine, St. Louis, 1893, aged 78, died, July 17

Hugo Edward Betz, St. Joseph, Mich., Bennett College of Eclectic Medicine and Surgery, Chicago, 1896, member of the Illinois State Medical Society, at one time trustee of the Chicago Medical Society, formerly professor of dermatology at his alma mater, superintendent of the Iroquois Memorial Hospital, Chicago, from 1915 to 1924 and formerly on the staff of the Cook County Hospital, Chicago, aged 81, died in Berrien Springs, July 29, of thromboangitis obliterans

John Philip Boland, Chicago, Rush Medical College, Chicago, 1928, commissioned a captain in the medical corps, Army of the United States, June 22, 1942, relieved from active duty Jan. 2, 1943 and dishonorably discharged, Jan. 19, 1943, aged 41, died, January 18, of an overdose of barbiturate poisoning

Edwin C. Bollinger, Toledo, Ohio, Chicago Physio-Medical College, 1894, served on the staff of the Women's and Children's Hospital, aged 72, died, July 27, of heart disease

Arthur Stout Boyett, Buena Vista, Ga., University of Nashville (Tenn.) Medical Department, 1894, Vanderbilt University School of Medicine, Nashville, 1894, mayor of Buena Vista, served as state representative and as chairman of the board of county commissioners, aged 73, died, July 30

Raleigh Virgil Butler, Minneapolis, University of Minnesota Medical School, Minneapolis, 1937, aged 39, died in July

Herbert William Case, East Tawas, Mich., Michigan College of Medicine and Surgery, Detroit, 1904, aged 60, died, July 15, of lobar pneumonia

Charles Ellis Clark, Baltimore, the Hahnemann Medical College and Hospital, Chicago, 1912, served during World War I, formerly on the staff of the Hahnemann Hospital, aged 63, died, July 25, of heart disease

Fred William Compton, Olney, Calif., University Medical College of Kansas City, Mo., 1888, aged 80, died in Marysville, June 10, of coronary occlusion and coronary sclerosis

Thomas John Connor ☉ Arlington, Mass., Boston University School of Medicine, 1922, served on the staff of the Lawrence Memorial Hospital, Medford, aged 50, died in East Sandwich, July 16, of coronary thrombosis

Edgar Parsons Cook, Johnstown, Ohio, Cleveland Medical College, 1897, served in the medical corps of the U. S. Army during World War I, aged 76, died in the Newark Hospital, July 6

James H. Cook, McMinnville, Ore., University of Oregon Medical School, Portland, 1895, formerly a trustee of the Linfield College, aged 79, died, July 3, of heart disease

Pleasant A. Creswell, Columbia, Tenn. (licensed in Tennessee in 1912), veteran of the Spanish-American War, aged 69, died recently of bronchial asthma

Dorwin LeRoy Culver, St. Augustine, Fla., University of the City of New York Medical Department, New York, 1895, aged 81, died, July 29, of hypostatic pneumonia

Louis Frederick Curran ☉ Boston, Tufts College Medical School, Boston, 1917, professor of clinical medicine at his alma mater, member of the National Gastroenterological Association, on the staff of the Boston City Hospital, physician in chief at the Carney Hospital, trustee of St. Michael's College, Winooski, Vt., aged 57, died, July 28, of coronary thrombosis

Gustavus Cornelius Darlington, Reno, Nev., Long Island College Hospital, Brooklyn, 1901, member of the Medical Society of the State of New York, served overseas during World War I, aged 80, died, July 28, of pneumonia

Ernest Joseph David, Lowell, Mass., Laval University Faculty of Medicine, Quebec, Canada, 1915, member of the Massachusetts Medical Society, district welfare physician for the city, aged 58, on the courtesy staff of St. Joseph's Hospital where he died, July 11, of acute coronary occlusion

Charles Wesley Davis, New Castle, Pa., Western Pennsylvania Medical College, Pittsburgh, 1895, aged 76, died, July 27, of congestive heart disease

Homer Augustus Davis, Missoula, Mont., Dartmouth Medical School, Hanover, N. H., 1892, aged 85, died, June 27

Jesse J. Dean, Waco, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1897, active in the establishment of the Dean Highland school, aged 69, died, July 22, of heart disease

Peter De Gaetano, Brooklyn, Long Island College Hospital, Brooklyn, 1914, aged 52, died, July 31

Allen Ross Diefendorf, New Haven, Conn., Yale University School of Medicine, New Haven, 1896, member of the Connecticut State Medical Society, American Neurological Association and the American Psychiatric Association, served as president of the Connecticut Society of Psychiatry, for many years lecturer on psychiatry at his alma mater, aged 71, died at the New Haven Hospital, July 30, of heart disease

Henry E. Donges, Uvalde, Texas (licensed in Texas under the Act of 1907), aged 81, died in the Merritt Hospital, July 24

Francis Bernard Donohue, Bloomingburg, N. Y., Columbia University College of Physicians and Surgeons, New York, 1901, at one time physician at St. Bonaventure College at Allegany, aged 69, died, July 26

Alexander McGill Duff Sr., Republic, Pa., Western Pennsylvania Medical College, Pittsburgh, 1901, for many years a director of the First National Bank of the Republic, chairman of the medical committee of civilian defense, president-elect of the Republic Rotary Club, aged 66, died in the Uniontown Hospital, July 24, of chronic nephritis

Lawrence Francis Dugan, Faribault, Minn., Marquette University School of Medicine, Milwaukee, 1924, member of the Minnesota State Medical Association, aged 45, served on the staff of St. Lucas Evangelical Deaconess Hospital, where he died, July 17, of coronary thrombosis

William Esser, Manning, Iowa, Rush Medical College, Chicago, 1891, aged 86, died in Carroll, June 6, of uremia

William Harrison Finney ☉ Clintonville, Wis., Northwestern University Medical School, Chicago, 1899, served as a captain in the medical corps of the U. S. Army during World War I, for many years physician and surgeon for the Chicago and Northwestern Railroad, donated the building site for Clintonville's public library, which was named for him, aged 68, died in St. Elizabeth Hospital, Appleton, July 25, of gangrenous appendicitis

Chester Arthur Fleger ☉ Ansted, W. Va., Maryland Medical College, Baltimore, 1905, aged 62, died, July 22, of angina pectoris

Edward Samuel Folk ☉ Canton, Ohio, Ohio Medical University, Columbus, 1902, since January 1939 mayor of Canton, formerly president of the city council, member of the board of education and board of health, served during World War I, aged 66, honorary member and in 1937 president of the staff of the Aultman Hospital, where he died, July 31, of coronary heart disease

Isar Goldofsky Fox, Harlingen, Texas, University of Texas School of Medicine, Galveston, 1924, specialist certified by the American Board of Radiology, Inc., president of the

Cameron-Willcox Counties Medical Society, member of the State Medical Association of Texas and the Radiological Society of North America, Inc., roentgenologist to the Valley Baptist Hospital, aged 42, died, July 15, of acute leukemia

Morris Frank ♂ Boston Harvard Medical School, Boston, 1911, counselor of the Norfolk District of the Massachusetts Medical Society, school physician, on the staff of the Jewish Memorial Hospital, on the associate staffs of the Beth Israel and Washington hospitals, physician for the Selective Service Board during World War I and recently, aged 57, died, June 17 of coronary sclerosis

Rawley H Fuller, South Boston, Va., University College of Medicine, Richmond, 1905, member of the Medical Society of Virginia, surgeon for the Southern Railroad, aged 64, medical superintendent and owner of the South Boston Hospital, where he died, July 24, of cerebral thrombosis

Charlton Edwin Gamble, Turbeville, S. C., Medical College of the State of South Carolina, Charleston, 1907, aged 62, on the courtesy staff of the Tuomey Hospital, Sumter, where he died, July 10, of hypertension, nephritis and cerebral hemorrhage

Frank R Geiger, Columbia, S. C., Tennessee Medical College, Knoxville, 1893, member of the South Carolina Medical Association on the staff of the Columbia Hospital, aged 79, died, July 18, of cerebral hemorrhage

William Henry George ♂ Albany, N. Y., Albany Medical College, 1894, served on the draft board during World War I, aged 71, died, July 16 of coronary disease

Maurice Gerstein, Brookline, Mass., New York University Medical College, New York, 1896, member of the Massachusetts Medical Society, past president of the Norfolk District Medical Society served as chief surgeon at the Jewish Memorial Hospital and on the courtesy staff at Beth Israel Hospital, Boston, where he died, July 13, of myocardial infarction, aged 73

William Winder Goldsborough, Greensboro, Md., University of Maryland School of Medicine, Baltimore, 1901, formerly state senator, served as president of the Caroline County Bank, aged 68, died in Princeton, N. J., July 13, of carcinoma of the left hand, carcinoma of the left side of the chest and chronic myocarditis

Burton Thomas Gordon ♂ Pompano, Fla., Rush Medical College, Chicago, 1910, at one time on the staff of St. Anne's Hospital, Chicago, aged 58, died in Deerfield Beach July 2, of chronic rheumatic heart disease

Gus R. Griggs, Baird Texas (licensed in Oklahoma in 1908), aged 66 died in June of carcinoma of the lungs

Charles Raymond Haley, San Augustine, Texas, Chicago College of Medicine and Surgery, 1916, first lieutenant in the medical corps of the U. S. Army during World War I, served as health officer of San Augustine County, aged 54, died recently of carcinoma of the colon

Henry Brown Hart, Sarasota, Fla., Medical School of Maine, Portland, 1899, member of the Massachusetts Medical Society, served on the board of the Cape Cod Hospital Hyannis Mass., formerly treasurer of the Barnstable District (Mass.) Medical Society, aged 72, died in Bradenton, July 13, of cerebral hemorrhage due to arteriosclerosis

Dorsey Alford Harwood ♂ Santa Ana, Calif., College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1906, president of the Orange County Medical Society, aged 63, on the staff of St. Joseph Hospital, Orange, where he died, July 17, of coronary insufficiency

Della Hertzsch, Louisville, Ky., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891, member of the Kentucky State Medical Association, for many years served as examining physician for the city schools, aged 82 died in the Norton Memorial Infirmary, July 12, of a fracture of the left hip from a fall and bronchopneumonia

John Henry Heuser, Louisville, Ky., University of Louisville Medical Department, 1891 member of the Kentucky State Medical Association, served during World War I, formerly on the staff of St. Mary and Elizabeth Hospital for many years medical examiner for the Metropolitan Life Insurance Company, aged 78 died, July 1, of myocarditis

George Price Hill, Summit Hill, Pa., Medical College of Philadelphia 1904, aged 64, died, July 9, of pleurisy and chronic myocarditis

Marie Kirby Hopkins Humphrey, East Rochester, N. Y., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900, aged 67 died in the Strong Memorial Hos-

pital, Rochester, July 18 of pulmonary embolus due to rheumatic and arteriosclerotic heart disease

Henry Creath Kelker, Cleveland, Western Reserve University Medical Department, Cleveland, 1903, for twenty-eight years physician for the Cleveland Christian Home, formerly on the staff of the Fairview Park Hospital, served as examiner for the Big Four Railroad, aged 68, died, July 11, of coronary occlusion

Frank Kenworthy ♂ Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1901, a captain in the medical corps of the U. S. Army during World War I, for many years surgeon for the city department of public safety, served on the staffs of the Western Pennsylvania and Shadyside hospitals, aged 65, died, July 14, of coronary thrombosis

Jacob H Kerth, San Diego, Calif., Medical College of Evansville, Ind., 1881, aged 87, died, July 8, of heart disease

John Ketterle, St. Albans, N. Y., Bellevue Hospital Medical College, New York, 1897, member of the Medical Society of the State of New York, a captain in the medical corps of the U. S. Army during World War I, aged 70, died, July 9, in the Mary Immaculate Hospital, Jamaica, of carcinoma of the sigmoid

Adolph Kroll Jr, Passaic, N. J., University and Bellevue Hospital Medical College, New York, 1916, member of the Medical Society of New Jersey, member of the staffs of the Passaic General and St. Mary's hospitals, aged 51, died suddenly, July 7, in the Newark induction center of coronary occlusion

Oliver William Kulp, Davenport, Iowa, State University of Iowa College of Medicine, Iowa City, 1896, formerly a captain of Company B, 54th Infantry of the Iowa National Guard, veteran of the Spanish-American War, served on the staff of the Mercy Hospital, aged 68, died, July 5, in Iowa City of coronary embolism and carcinoma of the mouth

Joseph Philorum Lapointe, Harvey, N. D., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Que., Canada, 1917 served on the staff of the St. Aloisius Hospital, aged 52 drowned, June 25

Samuel Elijah Newman ♂ St. Louis, Miami Medical College, Cincinnati, 1902, member and formerly vice president of the American Proctologic Society, on the staff of the Jewish Hospital and City Sanitarium, aged 65, died, July 17, of angina pectoris

James Joseph Pantoni, Portland, Ore., Long Island College Hospital, Brooklyn, 1894, member of the Oregon State Medical Society, formerly medical director of the Oregon State Penitentiary Hospital, Salem, served with the Oregon National Guard, Company G, first regiment, aged 81, died, June 19, of carcinoma of the esophagus

Brantly Fuller Parker, York, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1903, member of the Medical Society of the State of Pennsylvania served during World War I, aged 65, died, June 28 of gastric carcinoma

Roy C. Pope, Niantic, Ill., Michigan College of Medicine and Surgery, Detroit, 1901, member of the Illinois State Medical Society, aged 67, died in Boulder Junction, Wis., July 8, of valvular disease of the heart

Harvey Francis Rawlings ♂ Champaign, Ill., University of Louisville (Ky.) Medical Department, 1910, served during World War I, on the staffs of the Mercy Hospital, Urbana, and the Burnham City Hospital, aged 59, died in Jacksonville, July 14, of bronchopneumonia

John Luther Reeves, Philadelphia, Howard University College of Medicine, Washington, D. C., 1923, member of the Medical Society of the State of Pennsylvania and the American College of Chest Physicians on the staff of the Mercy Hospital, aged 43 died July 11, of carcinoma

Brette Redpath Riley ♂ Benedict Kan., Central Medical College of St. Joseph, Mo., 1896 served as mayor of Benedict and for many years as a member of the board of education, served during World War I, aged 72 died July 16, of coronary embolus

John Wylie Robertson, Coulterville, Ill., Beaumont Hospital Medical College St. Louis 1889 member of the Illinois State Medical Society for many years local physician and surgeon for the Illinois Central Railroad Company, aged 81, was killed July 26 when the automobile in which he was driving was struck by a train

Willard B. Robinson, Richmond, Va., Kentucky School of Medicine Louisville 1886, aged 81 died July 4

Armand Otto Rogers, Ennis, Texas, Meharry Medical College, Nashville, Tenn., 1925, aged 45, died, June 21, of hypertension and myocarditis

Lurten Roscoe Saylor, Dayton, Ohio, Medical College of Ohio, Cincinnati, 1888, for many years served as deputy recorder of Montgomery County, aged 81, died, July 21, of heart disease

Joseph Peter Schlaikowski, Wauwatosa, Wis., Marquette University School of Medicine, Milwaukee, 1913, served during World War I, resident physician at the Mairdale Sanatorium, aged 55, died, June 14, of coronary thrombosis

Henry Alvin Shaffer ♂ Charleston, Ill., the Hahnemann Medical College and Hospital, Chicago, 1903, past president of the Coles-Cumberland Counties Medical Society, served during World War I, formerly health officer, president of the staff of the M. A. Montgomery Memorial Sanitarium, aged 69, died, July 15, of acute pyelitis

John Cresswell Slawson, Orlando, Fla., New York University Medical College, New York, 1898, for many years health officer of the town of Carmel, N. Y., and attending physician of the Lincolndale branch of the New York Catholic Protectory, formerly on the staffs of the Saratoga Springs Sanitarium, the Dr. Strong's, Inc., Saratoga Springs, N. Y., and the Faxon Hospital, Utica, N. Y., aged 66, died, July 13, of chronic myocarditis

Gilbert Cumin Smith, Louisville, Ky., University of Louisville Medical Department, 1892, demonstrator of analytic chemistry at his alma mater, 1907-1908, and assistant to the chair of chemistry and toxicology, 1908-1909, also a pharmacist, aged 74, died in St. Joseph Infirmary, June 27, of carcinoma of the esophagus

Charles James Smyser, New Wilmington, Pa., Harvard Medical School, Boston, 1897, past president of the Lawrence County Medical Society, member of the Medical Society of the State of Pennsylvania, served during the Spanish-American War and World War I, on the staff of the Jameson Memorial Hospital, New Castle, aged 78, died, July 22, of arteriosclerosis

John Harvey Sparks, Detroit, Meharry Medical College, Nashville, Tenn., 1914, member of the Michigan State Medical Society, aged 54, on the staffs of the Wayne Diagnostic Hospital and the Parkside Hospital, where he died, July 11

Thomas Frank Staley, Bristol, Tenn., Medical College of Virginia, Richmond, 1900, chairman of the Missionary Emergency Fund, Inc., aged 67, died in the Henry Ford Hospital, Detroit, July 13, of acute yellow atrophy

Eugene Gillis Steele ♂ Buffalo, Wyo., Albany (N. Y.) Medical College, 1906, member of the Missouri State Medical Association, at one time on the staff of the Santa Fe Coast Lines Hospital, Los Angeles, aged 62, died, July 20, of coronary sclerosis

Robert Marcus Stith ♂ Seattle, University of Pennsylvania Department of Medicine, Philadelphia, 1899, member of the American College of Chest Physicians, served as a captain in the medical corps with the 69th artillery during World War I, was chief of the division of tuberculosis control of the city health department, served as consultant for the United States Marine Hospital, medical director of the Firland Sanatorium and Isolation Hospital, Richmond Highlands, Wash., aged 68, died, June 22, of cerebral hemorrhage

Cephas Swanson, Minneapolis, University of Minnesota College of Medicine and Surgery, Minneapolis, 1907, member of the Minnesota State Medical Association, medical examiner for the Selective Service Board number 19, aged 67, on the staff of the Lutheran Deaconess Home and Hospital, where he died, July 20, of cerebral hemorrhage

Albert B. Sweet, Hopkins, Minn. (licensed in Minnesota in 1880), also a pharmacist, Civil War veteran, aged 93, died in the Veterans Administration Facility, Minneapolis, July 6, of cerebral thrombosis

Richard Jerome Tanner, Norfolk, Neb., Lincoln Medical College of Cotner University, 1909, at one time known as "Diamond Dick", aged 74, died in a Norfolk hospital, July 2, of an injury received in a fall

Frank Eugene Towers, Minneapolis, University of the City of New York Medical Department, 1875, past president of the Hennepin County Medical Society, formerly served as county coroner, aged 92, died in the Parkview Sanatorium, June 1, of generalized arteriosclerosis and bronchopneumonia

Haworth Robert Traver, Buffalo, Buffalo School of Medicine, 1917, served during World War I, aged 50, died in the Veterans Administration Facility, Canandaigua, N. Y., July 6, of coronary heart disease

Harrison Allen Tucker, Brooklyn, Long Island College Hospital, Brooklyn, 1888, aged 78, died, June 28, of heart disease

Arthur Robert Turner ♂ Norwalk, Conn., Université de Paris Faculté de médecine, France, 1894, on the consulting staff of the Norwalk Hospital, aged 80, died, July 2, of coronary thrombosis

James Walsh ♂ Cortland, N. Y., New York Homeopathic Medical College and Hospital, New York, 1903, formerly school physician, chief of staff, Cortland County Hospital, aged 73, died, July 31, of coronary thrombosis

Stephen W. Williamson, Dovesville, S. C., College of Physicians and Surgeons, Baltimore, 1904, aged 72, died in the McLeod Infirmary, Florence, July 14, of myocarditis and cerebral thrombosis

John Wotherspoon, Seattle, University of Glasgow Medical Faculty, Scotland, 1889, member of the Washington State Medical Association, aged 79, died, July 5, of chronic myocarditis

Alonzo D. Wright, Coxs Creek, Ky., Kentucky School of Medicine, Louisville, 1886, aged 85, was found dead in bed, July 1

Justus Gaige Wright, Brooklyn, Long Island College Hospital, Brooklyn, 1899, member of the Medical Society of the State of New York, on the staff of the Carson C. Peck Memorial Hospital, consulting pediatrician to the Cumberland, Prospect Heights and the Brooklyn Nursery and Infants' hospitals, aged 65, died at his summer home in Mattituck, N. Y., July 27

Goldman McDonald Young ♂ Postell, N. C., Lincoln Memorial University Medical Department, Knoxville, Tenn., 1916, aged 58, died, July 9, of carcinoma of the stomach

DIED WHILE IN MILITARY SERVICE

William Ambrose Hutchinson, Texarkana, Ark., Tulane University of Louisiana School of Medicine, New Orleans, 1924, served as secretary of the Bowie County (Texas) Medical Society in 1934 and as president in 1938, in 1931 was commissioned a first lieutenant in the medical corps of the Texas National Guard, in July 1932 promoted to captain and in March 1940 became a major, began active duty in the medical corps of the U. S. Army (National Guard) in November 1940, was promoted to the grade of lieutenant colonel in June 1942, had been in command of a hospital at Eritrea, Africa, was killed in an airplane crash in the Middle Eastern area of North Africa, February 23

William Harris Funk ♂ Captain, M. C., U. S. Navy, Washington, D. C., Johns Hopkins University School of Medicine, Baltimore, 1920, U. S. Naval Medical School, 1921, entered the medical corps of the U. S. Navy in June 1920, served on many assignments in various parts of the world where the Navy maintains its stations, specialist certified by the American Board of Internal Medicine, diplomate of the National Board of Medical Examiners, fellow of the American College of Physicians, aged 50, died, January 6, in Kodiak, Alaska

Adam George Heilman ♂ Lieutenant Colonel, M. C., U. S. Army, Washington, D. C., University of Pennsylvania School of Medicine, Philadelphia, 1913, U. S. Army Medical School, 1922, served during World War I, entered the medical corps of the U. S. Army as a first lieutenant in 1920, aged 57, died in the Walter Reed General Hospital, August 12, of bacterial (Streptococcus fecalis) endocarditis

Pascasio Quinones-Chacon ♂ Baltimore, George Washington University School of Medicine, Washington, D. C., 1936, member of the Medical Association of Puerto Rico, began active duty as first lieutenant in the medical reserve corps of the U. S. Army in February 1942, aged 32, was killed in an airplane accident in Puerto Rico, Oct. 1, 1942

Robert Corkill Quine, San Diego, Calif., Rush Medical College, Chicago, 1935, commissioned a captain and later a major in the medical reserve corps of the U. S. Army, a flight surgeon, aged 41, was killed in an airplane crash at Gunnison, Colo., July 19

Bureau of Investigation

DANGEROUS TO HEALTH When Used as Directed

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they include reference to the fact that these nostrums were specifically declared to be dangerous when used in accordance with the directions given on the label by the manufacturer. The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Alcaban—Maffett Sales Corporation, Seattle. Shipped between Feb 19 and Sept 23 1941. Composition capsules containing emetine hydrochloride in amounts varying from 0.05 to 0.18 grain, with ephedrine hydrochloride, pilocarpine hydrochloride and milk sugar. Misbranded because dangerous to health when used in the dosage and with the frequency and duration suggested on label and because claim on carton "An aid in curbing the liquor habit" and similar statements in accompanying circular were false and misleading since this product would not be an appropriate or effective treatment for that purpose.—[D D N J F D C 606 February 1943]

Breatheasy Kits and Inhalant—Breatheasy Distributors Inc. Seattle. Shipped between Nov 27 1940 and April 26 1941. Composition government chemists reported finding that the product had the activity of 3 per cent synthetic racemic epinephrine hydrochloride. Misbranded because dangerous to health when used in the dosage or with the frequency or duration prescribed on bottle label and in accompanying booklet. Also misbranded because statements in booklet gave the impression that the product was a safe appropriate and efficacious treatment for asthma hay fever dermatitis eczema chronic bronchitis and head colds. Further misbranded because carton label failed to bear common or usual names of active ingredients a statement of the quantity of contents and the name and place of business of manufacturer packer or distributor.—[D D N J F D C 546 November 1942]

Bromo Caps—Parke Davis and Company, Detroit. Shipped April 11, 1941. Composition in each capsule essentially 23 grains of acetanilid, 4.4 grains of aspirin and $\frac{1}{4}$ grain of caffeine. Adulterated because strength differed from that claimed on label namely that each capsule contained $3\frac{1}{2}$ grains of acetanilid. Misbranded because dangerous to health if used in dosage or with frequency or duration suggested on label. Also misbranded because of misleading name since no bromine or compound thereof was present. Further misbranded because of false and misleading claims that product contained no narcotic drugs and was a quick sure scientific remedy which would take the place of aspirin and habit forming headache powders and liquids since the latter claim created the impression that the product contained neither dangerous drugs nor aspirin. Misbranded again because of misrepresentations that the preparation would give relief and constitute an adequate treatment for rheumatic pains, colds, toothache, mental fatigue, menstrual pains, feverish conditions, sea or car sickness or overindulgence in food or drink. Misbranded also because label did not list the common or usual names of the active ingredients other than acetanilid and the quantity or proportion of the latter was not correctly declared. Further charges of misbranding were. Labels failed to bear adequate directions for use or warnings that because of acetanilid content frequent or continued use might be dangerous causing serious blood disturbances, anemia collapse or dependence on that drug; also label did not caution against giving the product to children or using it in those pathologic conditions wherein it might be dangerous to health or warn against unsafe dosage or methods or duration of administration.—[D D N J F D C 601 February 1943]

Cold Tablets and Capsules—Upjohn Company, Kalamazoo, Mich. and New York. Shipped between Sept 25 1940 and Feb 14 1941. Composition included acetanilid, a quinine salt, camphor, podophyllin and aloin. Products were variously labeled: Capsules Cold Special, Upjohn Cold Special, Cold Special No. 2 and Swiss Capsules. All misbranded because dangerous to health when used in dosage and with frequency and duration suggested in labeling. Further misbranded because labeling did not in most instances bear adequate directions for use since such directions as were given would have caused the products to be dangerous to health. Further misbranded because labeling failed to warn sufficiently against use by children and in those pathologic conditions wherein the tablets and capsules might be dangerous to health. Also misbranded because labels failed to caution against use in cases of nausea, vomiting, abdominal pain or other symptoms of appendicitis or continued use which might cause serious blood disturbances, anemia collapse or a dependence on the drug. Misbranded finally because of false and misleading representation that the tablets and capsules were a remedy for simple colds.—[D D N J F D C 602 February 1943]

Leunbach' Paste—Merz and Company Chemical Works, Inc., Newark and East Orange, N. J. Shipped Aug 16 1940. Composition soap water and about 2 per cent each of alcohol and potassium iodide. Misbranded because dangerous to health when used, as an abortifacient in the dosage or with the frequency or duration recommended in labeling.—[D D N J F D C 607 February 1943] (Another consignment shipped Jan 25, 1942 by the Doctors Pharmacy, Milwaukee was declared misbranded under D D N J F D C 608 for the reason given above.)

Mrs. Moffatt's Shoo Fly Powders for Drunkenness—M. F. Groves' Son and Company, Philadelphia. Shipped Nov 2 1940. Composition tartar emetic. Misbranded because dangerous to health when used in the dosage or with the frequency or duration suggested in labeling and also because statement "for drunkenness" was false and misleading.—[D D N J F D C 605 February 1943]

Nature's Minerals Compound—Nature's Mineral Company, Indianapolis, also known as Nature's Minerals Company and Nature's Mineral Food Company. Shipped between Aug 26 1940 and Jan 24 1941. Composition (preparation in powder and tablet form), essentially compounds of calcium, magnesium, iron and sodium phosphates, carbonates, sulfates, chlorides, sulfur and fluorine. Misbranded because dangerous to health when used in the dosage or with the frequency or duration suggested in the labeling since it contained a poisonous substance, fluorine. Further misbranded because of false and misleading representations on cartons and bottles that the preparation would supply minerals deficient in the ordinary diet.—[D D N J F D C 541 542 and 545 November 1942] Consignments of a product called simply Nature's Minerals and shipped by the aforementioned concern between Sept. 13 1940 and April 18 1941 and reported identical in composition, were subjects of D D N J F D C 543 and 544 November 1942. One charge of misbranding was under the representations that the product would be efficacious in treating or preventing cancer, arteriosclerosis, diabetes, stomach, blood, kidney and bladder disorders, gallstones and some other things. Cases Nos. 544 and 545 also included the name of P. G. Jurich, Pasadena, Calif. as a shipper.

Special Formula Tablets and McNeal's Laxative Cold Tablets—Arner Company Inc., Buffalo, N. Y. Shipped Dec 16 1940. Composition (the products were identical) in each tablet acetanilid (approximately 1 grain), quinine sulfate (approximately 0.38 grain), a laxative plant drug and a small amount of atropine. McNeal product misbranded because dangerous to health when used in the dosage or with the frequency or duration suggested in the labeling. Also misbranded because labeling failed to give adequate directions for taking it and did not sufficiently caution against use by children or in those pathologic conditions in which it might be dangerous to health or warn against unsafe dosage or methods or duration of administration or application for protection of users. Special Formula Tablets misbranded because labels did not bear common or usual names of the active ingredients or declare the amounts or proportions of acetanilid and atropine present.—[D D N J F D C 547 November 1942]

Tabknoll Three Bromides Effervescent—H. G. Knoll and Company Inc., New York. Shipped Jan 6 1941. Composition ammonium potassium and sodium bromides. Misbranded because dangerous to health when taken in the dosage or with the frequency and duration prescribed in the labeling because latter failed to give adequate directions for use and to bear sufficient warnings against use when it might be dangerous to health, or caution against unsafe dosage or duration of administration in such manner and form as are necessary for protection of users.—[D D N J F D C 548 November 1942]

Whitehall's (Dr.) Compound Tablets—Dr. Whitehall Megrimine Company, South Bend, Ind. Shipped between Nov 27 and Dec 3, 1940. Composition acetanilid, sodium salicylate and plant material. Misbranded because dangerous to health if taken in the dosage or with the frequency or duration prescribed in the labeling since such use might cause serious blood disturbances, anemia collapse and a dependence on the drug. Further misbranded because labeling failed to give adequate directions for use since it did not provide for a limit as to the duration or frequency of administration. Misbranded also because labels failed to carry adequate warnings against use by children or in conditions in which the product might be dangerous to health or to caution against unsafe dosage or methods or duration of administration. Misbranded finally because label gave the false impression that the product was an appropriate treatment for the conditions described whereas it was not but actually a dangerous drug.—[D D N J F D C 549 November 1942]

Zerbst's Capsules—Zerbst Pharmacal Company, St. Joseph, Mo. Shipped Jan 20 1941. Composition capsules (in 25 cent package) each containing acetanilid ($1\frac{1}{2}$ grains per capsule) with caffeine, resinous material, camphor, capsicum, aloin and asafoetida (50 cent package) acetanilid ($2\frac{1}{2}$ grains per capsule) and a laxative plant drug not named. Both packages misbranded because dangerous to health when used according to directions on the label. Further misbranded because labels failed to bear adequate warnings against use by children or in those pathologic conditions in which product might be dangerous to health or to caution against unsafe dosage or duration of administration for protection of users since no warning was given against use in the presence of appendicitis symptoms or with reference to possibility of serious blood disturbances following use of acetanilid or any warning that frequent or continued use might result in dependence on the drug. The 50 cent package was found misbranded also because among other things it was falsely represented that these capsules would break up a cold and label failed to give common or usual name of each active ingredient or declare quantity of contents of the package.—[D D N J F D C 550 November 1942]

Correspondence

THE EMERGENCE OF THE CHRONIC PATIENT

To the Editor —Of late years the students of vital and social statistics have been calling our attention to the remarkable increase in longevity which is having such a profound influence on our way of living. As the length of our days on earth is increased we find ourselves living longer, in health and otherwise, with people who must live longer with us. Youth, being confronted with the problems of age, must share them. Youth too may be stricken by long-term disease, as in the case of rheumatic fever with its complications and sequelae. Against the satisfaction and joy of preventing and curing illness in the earlier years we now have the specter of the degenerative and malignant diseases which are more characteristic of the later years.

The "acute" hospital, which has chosen and specialized in emergencies during the earlier years of our lives, can have only one response to the needs of the chronic patient with whom philanthropist, physician, nurse and social worker must now live longer. We have learned to be patient with the lame, the halt and the blind, and we must learn to be patient with those who are sick with a long-term disease. Medical science is equipped to meet the challenge in this realm and should welcome the opportunity. The beggar must not be turned away from our doors for fear that he may break our hearts.

A reasonable proportion of long-term patients who still require intensive medical care should be retained in general hospitals, and the establishment of independent hospitals for chronic disease, at comparatively greater expense if the job is to be done right, and at a distance, should be discouraged. The qualifying adjectives "acute" and "chronic" have no place in connection with institutions built for the scientific care of the sick. For our help in reconsidering the claims of the long-term patient to the attention of the modern hospital we have a number of recent developments which owe their existence to the war and to the threat of insecurity generally.

Provisions for social security which preceded and subsequently went hand in hand with the idea of the four freedoms include more public funds for the care of patients who are chronically ill and cannot finance themselves. (Poverty and chronic disease lie within a vicious circle which must be broken somewhere.) Furthermore, we are witnessing an extension of voluntary group insurance schemes which will confer more benefits all around, over longer periods of time, for those who can afford it. Direct income from patient sources will also be noticeably increased. For these three reasons, hospitals will be less dependent on philanthropy and ultimately less dependent on voluntary medical service. Because of these new or improved sources of income the financial reason for the transfer of long-term patients from the "acute" hospital to a segregated and isolated institution independently maintained for chronic disease, at a time when they may need scientific care most, will disappear. Such patients will be retained longer in general hospitals, where they belong. The duration of their illness, which now differentiates them so artificially from short-term patients, will no longer appear as a criterion for their admission or retention.

Apart from economic developments which will favor the retention of the long-term patient, we have the following to consider: (a) the increased interest of the physician, social worker and public generally in chronic disease, (b) the provision of full time opportunities in hospitals and the remuneration of physicians for medical service in hospitals and dispensaries

generally, (c) the increase of laboratory facilities in hospitals where qualified physicians who have selective interests in the various categories of chronic disease can develop their special talents along these lines and (d) the utter inadequacy and indecency of existing facilities for the care of long-term patients. Thus, the second major reason for transfer will disappear, namely the lack of interest in patients with a long drawn out illness. The presence of these patients in hospitals where they are under control over longer periods of time, either continuously or in divided visits, gives to the scientific physician greater opportunities to study the remote results of treatment than ever before and, if he is freed from financial worry while having the additional opportunities of the laboratory, he will welcome the change. In passing, I might add that the lack of interest of the doctor in chronic disease encourages quackery as a possible relief to the uneducated patient.

These new trends indicate that chronic disease is rapidly emerging as an acute social and medical problem, and it will not be denied if for no other reason because it is beginning to strike home to many of us who are responsible for hospital progress. Moreover, the war will leave us with a demand for the rehabilitation of the wounded in our armed forces, many of whom will be in the long-term classification. This will doubtless increase our respect for the patient suffering from chronic disease and stimulate adequate provisions for his hospitalization.

The medical profession is greatly concerned with the trends of social security in its broadest implications and now has the opportunity of cooperating in the solution of this vexing problem, while benefiting itself in many desirable ways. It is now up to the hospitals and their medical boards to formulate a program without delay. In competition with government, they have always done better in such matters thus far.

E M BLUESTONE, M D, New York.

Director, Montefiore Hospital

"INSECT VECTORS OF POLIOMYELITIS"

To the Editor —In reading your editorial on "Insect Vectors of Poliomyelitis" in the August 28 issue of THE JOURNAL I was struck by this statement: "The dominant species in each group were green bottleflies and blowflies, the common housefly being present in small numbers in only two of the four positive specimens."

The common housefly is such an important vector of dysentery that it seemed strange that it had not been more seriously considered in these investigations concerning poliomyelitis. I wondered at once what type of bait had been used in catching the flies used in the experiments by Trask, Paul and Melnick. I had nussed their articles in the *Journal of Experimental Medicine*, but on looking up their publication I see that the bait used principally was fish. This bait is somewhat attractive to the housefly, but, of course, much more so to bottleflies and blowflies. Had a fermenting bait been used it is far more than probable that the dominant species of flies caught would have been houseflies, and the results might have been totally different.

Control of the housefly is a major problem in Army sanitation and it is especially important that the role of this insect with respect to the spread of poliomyelitis be made clear. If any experimental work is being done during your current epidemic in Chicago, it is suggested that efforts be made to trap houseflies and repeat the experiments of Trask, Paul and Melnick.

CHARLES G SOUDER,
Colonel, M C, U S Army

Miscellany

THE AMERICAN MEDICAL ASSOCIATION AND THE CULTIVATION OF THE CINCHONA TREE IN THE UNITED STATES

ERWIN H. ACKERKNECHT, M.D.
BALTIMORE

It is now common knowledge that the Japanese in taking Java cut off the source of almost the entire prewar quinine supply of the world. It is equally well known that the resulting quinine shortage is still, in spite of many ingenious and valuable countermeasures, one of the most serious problems of medical warfare. The American Medical Association can rightly be proud of having been, seventy five years ago, the protagonist of a plan which if it had been executed, would have saved us our present difficulties.

In 1738, a hundred years after the introduction of the Peruvian bark into our pharmacopeia, La Condamine had already foreseen the exhaustion of the South American supply as a consequence of the purely destructive methods of "production" in New Granada, Ecuador, Peru and Bolivia. After a hundred years had passed the situation had grown so dangerous indeed that the Dutch and the English started cultivating the cinchona tree in their own colonies, the former in 1854 in Java, the latter in 1860 in the Neilgherry Hills of southern India.

The Transactions of the fifteenth annual session of the American Medical Association, held in 1864 in the city of New York, contain a little memorandum of Dr. D. J. Macgowan (apparently an army surgeon) of Washington, D. C., on the "Naturalization of Cinchona on the Eastern Continent."¹ Macgowan dealt with the Dutch and English experiments and recommended that they also be tried in Haiti. The assembly reacted favorably to the suggestion, and on the motion of Dr. J. H. Griscom, the famous New York Quaker and sanitarian, appointed a committee composed of three of its most distinguished members, Joseph M. Smith, E. R. Squibb and J. H. Griscom, to confer with the Haitian minister² on the subject.

Three years later, in 1867, the Medical Society of Wayne County, Mich., submitted to the eighteenth annual session of the American Medical Association a paper of its member Dr. J. M. Bigelow which examined the whole cinchona situation in more detail and boldly and rightly asked the introduction and cultivation of the cinchona trees in the United States.³ Dr. Bigelow designated western Texas, Arizona or Lower California as best fitted for such plantations. On the motion of Dr. W. B. Atkinson (Pennsylvania) a committee consisting of J. M. Toner (District of Columbia), F. Howard (District of Columbia) and C. A. Lee (New York State), was appointed to "memorialize" Congress on this vital question.⁴ In the next year, 1868, Dr. Toner read a report of the committee in the Section on Chemistry and Materia Medica and a new committee, composed of Dr. L. J. Deal (Pennsylvania), T. A. Logan (California) and J. M. Bigelow (Michigan) was elected to memorialize Congress.⁵ For seven years this committee under the leadership of Dr. Deal, was to carry on a vigorous, intelligent fight for the cultivation of the cinchona tree in the United States.

At the twenty-first annual session, in 1870, Dr. L. J. Deal submitted a report of the committee, consisting mainly of a proposed memorial to Congress.⁶ This memorial was the most important and substantial document published during this action of the American Medical Association. It starts with an explanation of the medical value of quinine and then gives some interesting data on the economic implications of the problem. For example, from 1859 to 1865, \$2,287,250 worth of bark and quinine salts were imported into the United States, between 1861 and 1865 the United States Army purchased 1,198,000 ounces of quinine (the average annual consumption of the United States before World War II was 5,000,000 ounces). The memorial describes the danger arising from the exhaustion of the Peruvian supply and recommends the cultivation of cinchona in California, which seemed to be even better suited for such an enterprise than India. The aid of the California State Board of Agriculture and the Sacramento Medical Society had already been secured. The memorial concludes:

The American Medical Association therefore asks in view of the foregoing facts, that the Congress of the United States would appoint a commission of scientific men for the following purpose:

1 To determine what portion if any of the public domain of the United States will produce the cinchona and which may be set apart for this purpose.

2 To determine what species may be best transplanted and will furnish the greatest amount of active principles.

3 That they be authorized to visit such South American countries as they may deem necessary in order to determine these points, employ a competent botanist to assist them and that our consuls in such States be instructed to further these investigations.

4 That they be empowered to negotiate for and obtain a proper quantity of seeds and plants.⁷

In 1872 Dr. L. J. Deal reported "a gratifying progress, Congress having been memorialized with a favorable prospect of success." A second memorial to Congress was submitted.^{7a} The transactions of 1874 contain a more detailed report of the committee which still sounds rather optimistic. Since 1868 "three memorials had been presented to Congress. The last by Mr. Scott of Pennsylvania in the Senate, and by Mr. Kelley of Pennsylvania in the House." The latter wrote to Dr. Deal that he could not assure him of speedy help from Congress in the matter but that continuous pushing of the matter would probably result in success. The committee had obtained the support of the Botanical Gardens in Washington, D. C., of the Department of Agriculture and of the Horticultural Society. President Grant, in his message relating to the purchase of San Domingo had advanced the argument that the climate and the soil of this island were suitable for the cultivation of cinchona. The committee was continued.⁸

But alas, at the twenty-sixth annual session in 1875, after a "report of progress," the committee was discontinued.⁹ We do not know the exact reasons and motivations for this step but though regrettable, it is only human that after seven years of incessant endeavor the Association grew tired of preaching to deaf ears and did not like Jacob go on for another seven years of bondage. In this action, which seemed only an episode but has now become so consequential, the American Medical Association showed a considerable degree of informedness and of foresight in the public interest. Like so many plans of prevention, its plan probably suffered from looking more costly than expedient. The failure seems no reason to give up in similar situations in which our scientific conscience commands unpopular proposals in the public interest. On the contrary it seems to be rather an admonition to be still more perseverant.

1900 East Monument Street.

6	Tr	A	M	A	21	153	160	1870
7	Tr	A	M	A	21	159	160	1870
7a	Tr	A	M	A	23	193	1872	
8	Tr	A	M	A	25	139	140	1874
9	Tr	A	M	A	26	44	1875	

From the Institute of the History of Medicine, Johns Hopkins University.

¹ Macgowan, D. J. "Naturalization of Cinchona on the Eastern Continent." *Tr. A. M. A.* 15: 151-154, 1864.

² *Tr. A. M. A.* 15: 31, 1865.

³ Cultivation of the Cinchona Trees in the United States. *Tr. A. M. A.* 18: 37-40, 1867.

⁴ *Tr. A. M. A.* 18: 40, 1867.

⁵ *Tr. A. M. A.* 19: 149, 1868.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, Oct 2, page 305

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Nov 15 and Jan 17 19 Sec, Dr J S Rodman, 225 S 15th St, Philadelphia

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Written Part I* Various centers, Jan 21 Final date for filing application is Oct 21 Sec, Dr P M Wood, 745 Fifth Ave, New York 22, N Y

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written Part I* Locally, Feb 12 Final date for filing application is Nov 15 Sec, Dr Paul Titus, 1015 Highland Bldg, Pittsburgh 6, Pa

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago, Jan 21 22 Sec, Dr Guy A Caldwell, 3503 Prytania St, New Orleans, Louisiana

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago, October, Los Angeles, Feb 25 (provided 50 applicants are accepted) Sec, Dr Dean M Lierle, University Hospital, Iowa City, Iowa

AMERICAN BOARD OF PEDIATRICS *Written Locally*, Feb 4 *Oral* Philadelphia, March 25 26, and San Francisco, May 6-7 Sec, Dr C A Aldrich, 707 Fullerton Ave, Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Written Locally*, Oct 30 *Oral Locally*, Dec 20 21 Final date for filing application is Sept 30 Sec, Dr Walter Freeman, 1028 Connecticut Ave. NW, Washington D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec, Dr B R Kirklin, 102 110 Second Ave S W Rochester, Minn

AMERICAN BOARD OF UROLOGY *Oral* Chicago, February *Written* Various centers, December Final date for filing application is Nov 1 Sec, Dr Gilbert J Thomas, 1409 Willow St, Minneapolis, Minn

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Venereal Diseases Constitutionality of City Ordinance Requiring Treatment of Infected Persons Convicted of Prostitution—By Little Rock city ordinances prostitution is made a criminal offense and the city health officer is required to ascertain by necessary tests and examinations whether or not a person convicted of prostitution has any venereal disease. Any evidence so acquired is not to be used in any criminal prosecution against the person convicted. If the convicted person is found to have a venereal disease in a communicable stage and if she fails to take or submit to treatment adequate for the protection of public health, the city health officer is authorized to commit her to an appropriate institution for treatment, provided only that she can be committed without endangering life. The plaintiff was convicted of prostitution and was thereafter examined by the city health officer and was found to have venereal disease in a communicable stage. She was thereafter ordered quarantined in a health center maintained by the United States government in Hot Springs, Ark. She then filed a petition for a writ of habeas corpus, contending that her detention was illegal because the ordinances purporting to authorize it were unconstitutional and void. The trial court granted the writ and the defendants, the city of Little Rock, the city health officer and the county sheriff, appealed to the Supreme Court of Arkansas.

The determining question here presented, said the Supreme Court, is whether or not the ordinances of Little Rock in question are valid as being within the police power of the city. Admittedly, the city has power to declare prostitution a criminal offense. The proceeding under which the plaintiff was detained is not a criminal proceeding, however, but is one in the interest not only of the plaintiff but of the public. It is a proceeding to compel her to be quarantined and segregated from the public to the end that she may be cured of the venereal disease with which she is infected and thus not communicate it to others. When a cure is effected the authority to detain her is at an end. Courts, the court continued, in testing the validity of a regulation, must resolve all doubts in favor of the legislative action and must sustain the regulation unless it appears to be clearly outside the scope of reasonable and legitimate regu-

lation. The police power of the state is founded in public necessity and this necessity must exist in order to justify its exercise. It is always justified when it can be said to be in the interest of the public health, public safety and public comfort, and in such instances private rights must yield to their security under reasonable laws. Can there be any doubt that the legislature might enact valid legislation similar to the ordinances here in question? We think not. If it could, then it can and has delegated this power to municipalities. Section 9543, Pope's Digest, authorizes municipalities to make ordinances to provide for the safety, preserve the health, promote the prosperity and improve the morals, order, comfort and convenience of the inhabitants thereof. Section 9589 further gives municipalities power to prevent injury or annoyance within the limits of the corporation, from anything dangerous, offensive or unhealthy. These two sections constitute a delegation to municipalities of the state's power to legislate in protection of public health. Exercise of the delegated powers by the city in the ordinances here presented must be held to be within the grant, unless it can be said that the power conferred on the city health officer is unreasonable. The court could not say that the power conferred on the health officer was "clearly outside the scope of reasonable and legitimate regulation."

Section 9679, Pope's Digest, authorizes a city council to establish a board of health, with jurisdiction for 1 mile beyond the city limits, and for quarantine purposes, in cases of epidemic, 5 miles. The trial court held that that statute denied the city health officer the right to quarantine plaintiff outside the city or county beyond the limits indicated in the statute. The statute referred to, said the Supreme Court, simply means that the jurisdiction of the health officer extends for 1 mile beyond the city limits, or for 5 miles for quarantine purposes, in cases of epidemics. It has no reference to the place a person may be confined for quarantine purposes, but only to the extent of the jurisdiction beyond the city limits for the better protection of the inhabitants of the city. Section 6438, *ibid*, expressly requires the city health officer to perform the duties prescribed for him by the regulations of the state board of health. A regulation of the state board of health, promulgated under that authority, provided that any health authority should, when in the exercise of his discretion he believed that the public health required it, commit any person apprehended, examined and found afflicted with an infectious disease and who refused or failed to take treatment adequate for the protection of the public health to a hospital or other place in the state for such treatment if the commitment could be done without endangering the life of the patient. This regulation, the court concluded, was authority to commit the plaintiff outside of Little Rock and to confine her where she was confined in Hot Springs.

The Supreme Court accordingly reversed the judgment of the trial court and remanded the plaintiff to the custody of the sheriff for isolation and quarantine.—*City of Little Rock v Smith*, 163 S W (2d) 705 (Ark, 1942)

Society Proceedings

COMING MEETINGS

Aero Medical Association of the United States Cincinnati Ohio, Oct 26 27 Dr David S Brachman, 5440 Cass Ave, Detroit, Secretary
American Academy of Ophthalmology and Otolaryngology Chicago Oct 10 13 Dr W L Benedict, 102 Second Ave S W, Rochester, Minn, Secretary
American Public Health Association New York Oct 12 14 Dr Reginald M Atwater, 1790 Broadway New York, Executive Secretary
Association of Military Surgeons of the United States Philadelphia, Oct 21 23 Colonel James M Phalen, Army Medical Museum, Washington D C, Secretary
Delaware Medical Society of, Wilmington, Oct 12 13 Dr W O La Motte, 601 Delaware Ave, Wilmington, Secretary
Inter State Postgraduate Medical Association of North America, Chicago, Oct 26 29 Dr Arthur G Sullivan, 16 North Carroll St, Madison, Wis Managing Director
Oklahoma City Clinical Society, Oklahoma City, Oct 18 21 Dr Clark H Hall, 117 North Broadway Oklahoma City, Secretary
Omaha Mid West Clinical Society, Omaha, Oct 25 29 Dr J D McCarthy, 1036 Medical Arts Bldg, Omaha Secretary
Radiological Society of North America Chicago, Nov 29 Dec 3 Dr Donald S Childs, 607 Medical Arts Bldg, Syracuse, N Y Secretary
Seaboard Medical Association, Richmond, Va, Nov 30 Dec 2 Dr Clarence P Jones, 3117 West Avenue, Newport News, Va, Secretary
Southern Medical Association, Cincinnati, November 16-18 Mr C P Loran, Empire Building, Birmingham, Alabama, Secretary
Virginia Medical Society of, Roanoke, Oct 25 27 Miss Agnes V Edwards, 1200 East Clay St, Richmond Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J Digestive Diseases, Fort Wayne, Ind

10 241-282 (July) 1943

- Effect of Atropine on Gastrointestinal Canal and Its Glands. V E Henderson and M O Sweeten—p 241
Newer Concepts in Treatment of Diabetes Mellitus with Protamine Insulin. E. Tolstoi—p 247
Pruritus Ani. A J Cantor—p 254
Effect of Dog's Bile Certain Bile Acids and India Ink on Bill rubinemia and Excretion of Bromsulphalein. A Cantarow and C W Wirts Jr—p 261
Some Effects of High Fat Diets on Intestinal Elimination. I Helen L. Wiloff, S D Koonce and H Jane McGuire—p 266
Cardiospasm. Successful Treatment by Esophagogastronomy. J Lichstein—p 271
Digestive Disturbances in Early Cardiac Failure. A W Oelgoetz—p 275
Tannin Control of Ileostomy. M Peelen and F F Yonkman—p 277

American Journal of Medical Sciences, Philadelphia

206 1-140 (July) 1943

- Atypical Pernicious Anemia of Young Adults. S O Schwartz and Helen Legere—p 1
Dynamics of Air Borne Infection. W F Wells and Mildred W Wells—p 11
*Studies on Bone Marrow in Vitro. I Cellular Pattern and Behavior of Explanted Bone Marrow. M Rachmulewitz and A Rosin—p 17
*Tissue Culture Studies on Cytotoxicity of Bactericidal Agents. II Effect of Tyrothricin, Gramicidin and Tyrocidine on Culture of Mammalian Spleen. W E Herrell, Dorothy Heilman and R P Gage—p 26
Clinical Significance of Loud Aortic and Apical Systolic Heart Murmurs without Diastolic Murmurs. L A Baker, H B Sprague and P D White—p 31
Magnesium Sulfate in Paroxysmal Tachycardia. L J Boyd and D Scherf—p 43
Criteria for Differentiating Deep Qs Electrocardiograms from Normal and Cardiac Subjects. M Mazer and J A Reisinger—p 48
Dissecting Aneurysm of Aorta. R B Logue—p 54
Arteritis in Rats with Experimental Renal Hypertension. W J Cro-martie—p 66
*Management of Obesity with Emphasis on Appetite Control. N H Colton, H I Seagal, A Steinberg, F R Shechter and N Pastor—p 75
Urinary Elimination of Phenolsulfonephthalein Injected into Cerebrospinal Cavity in Schizophrenia and General Paresis. S Androp, H E Ratcliffe and S Katzenelbogen—p 866

Studies on Bone Marrow in Vitro—Rachmulewitz and Rosin obtained bone marrow from the tibias of 6 to 8 week old rabbits. The containers used for explantation were glass tubes 15 cm in height and 8 mm in diameter. The bone marrow fragment of the size of 3 cubic millimeters was placed immediately after removal from the tibia in the medium, consisting of 3 drops of rabbit's plasma, 3 drops of Tyrode solution and 1 drop of diluted chick embryo extract. The tissue fragments were planted at the time when the plasma began to coagulate, so that they remained suspended in the upper layers of the medium. The tightly closed tubes were incubated at 37 C. After incubation the plasma clot containing the bone marrow explant was removed and fixed. Experiments were carried out with bone marrow of 26 rabbits. The bone marrow of 12 animals showed predominant leukopoiesis of 8 predominant erythrocytes. In the bone marrow of 6 animals myeloid and erythroid cells were present in nearly equal proportions. The material was fixed in Zenker's and Helly's fluid. After the specimens had been embedded in celloidin paraffin serial sections 4 microns thick were made and stained with hematoxylin-eosin. Some of the sections were stained with Giemsa stain. The object of this investigation was to establish a physiologic model which would help in the analysis of the factors which govern

normal and pathologic blood cell formation in the bone marrow. The method of bone marrow explantation and the observations made give reason to assume that this may be possible. The bone marrow in vitro continues for a certain period of time the specific functional activity, even at an increased rate. This period of functional activity of bone marrow in vitro can be made use of in the study of the factors which affect the bone marrow function. Maturation and multiplication of white and red cells was observed to take place in the explanted bone marrow, maturation of polymorphonuclear leukocytes in vitro was proved by differential cell counts. The period of functional activity of the explanted bone marrow is followed by depletion of the marrow parenchyma and fibroblastic proliferation of the stroma.

Cytotoxicity of Bactericidal Agents—In order to compare the relative cytotoxic effect of tyrothricin and its fractions gramicidin and tyrocidine, Herrell and his collaborators made experiments in which tissues were grown in a plasma clot in Carrell flasks for a period of four days. Rabbit spleen was used as a source of tissue because it is fairly homogeneous and provides a good source of large wandering cells or macrophages. The authors conclude that when the toxicity of the products of *Bacillus brevis* is determined by their ability to inhibit the migration of macrophages from the normal rabbit's spleen in a medium composed of serum, plasma and chick embryo extract, it appears that gramicidin is most toxic, tyrothricin is next in order of toxicity, and tyrocidine is much less toxic than either gramicidin or tyrothricin. The greater part of the cytotoxicity of tyrothricin is accounted for by its content of gramicidin. The authors emphasize that the cytotoxicity of products of *B. brevis* is low compared with that of a number of other germicides. This agrees with the absence of deleterious effects on the tissues when aqueous suspensions of these substances are used in the local treatment of infections.

Obesity and Appetite Control—According to Colton and his associates the restriction of food intake is still the basic principle in all successful attempts at treatment. Dietary restriction over a long period of time is exceedingly difficult in most cases without the aid of some agent that depresses the appetite. The authors treated 300 cases of obesity by dietary restriction and appetite control. Appetite was best controlled by dextroamphetamine, although amphetamine and propadrine hydrochloride were found to be effective. Treatment was aimed at correcting eating habits so that the patient would have less desire for the high caloric foods. Various therapeutic agents (thyroid, ammonium chloride, salyrgan-theophylline and decholin sodium) were added successively to eliminate each refractory period. The average weight loss for the entire group for the therapy was 2 pounds (0.9 Kg) a week. The greatest weight loss was during the first month of therapy and averaged 2½ pounds (1.1 Kg) a week.

American Journal of Ophthalmology, Cincinnati

26 675-784 (July) 1943

- Diathermy Coagulation in Treatment of Angiomatosis Retinae and of Juvenile Coats's Disease. Report of 2 Cases. J S Guyton and F H McGovern—p 675
*Colored Reflex from Anterior Capsule of Lens in Mercurialism. W S Atkinson—p 685
Multiple Primary Malignant Neoplasms. Report of Case of Malignant Melanoma of Choroid and Glioblastoma Multiforme of Right Cerebral Hemisphere. Mary Knight Asbury and D Vail—p 688
Ocular Pathology of Methyl Alcohol Poisoning. W H Fink—p 694
Use of Furmethide in Comparison with Other Notics for Treatment of Glaucoma. Ella M Uhler—p 710
Abscess of Crystalline Lens. R O Rychener and E C Ellett—p 715
Nexus Flammeus Associated with Glaucoma. Report of Case in Which Cyclotherapy Was Used in an Attempt to Control Intraocular Pressure. B L Alvis and Virgil A Toland—p 720
Roentgenography of Exophthalmos with Notes on Roentgen Ray in Ophthalmology. R L Pfeiffer—p 724
Ocular Myiasis (Ophthalmomyiasis). Report of Case. R D Harley—p 742
Bee Sting of Cornea. L P Glover—p 744

Colored Reflex from Lens in Mercurialism—Atkinson describes a brownish reflex from the anterior capsule of the lens which occurs in cases of chronic mercurialism. This reflex may be found also in those who have worked for a long time with mercury or in an atmosphere containing mercury. Although

they may exhibit no symptoms of mercurialism. The reflex has not been observed in other patients nor has any previous report of such a reflex been found in the literature. This lusterless, somewhat homogeneous looking reflex from the anterior capsule of the lens is seen well with the slit lamp when a low power objective is used. When examined with oblique illumination the lenses of the eyes in which the colored reflex is pronounced present a dull gray appearance. The colored reflex, which is believed to be a deposit of mercury on or in the anterior capsule, does not disappear after the symptoms of chronic mercurialism subside or when the individual discontinues work with mercury. Some patients were examined ten and twenty years after they had last worked with mercury and the reflex was still as vivid as that which is seen in active workers who have symptoms of chronic mercurialism. Seventy persons who are or had been engaged in the manufacture of thermometers in which mercury is used were examined. One patient who had worked as a coner in the felt hat industry for over thirty years also was examined. This man exhibited definite symptoms of chronic mercurialism and a pronounced colored reflex from the anterior capsule. The colored reflex was present in 37, or over one half of the cases examined. Fourteen of the 71 manifested symptoms of chronic mercurialism, and in all of these cases the reflex was present. The author suggests that the colored reflex from the lens is a permanent and probably an early diagnostic sign of chronic mercurialism.

American Journal of Physiology, Baltimore

139 325-480 (July) 1943 Partial Index

- Potency of Liver Extract in Stimulating Gastric Secretion by Intravenous Injection and by Direct Lavage D B Butler, A P Hands and A C Ivy—p 325
- Studies on Effect of Thymoxethyl-diethylamine (929 G) and N-Diethylaminoethyl-N-Ethylaniline on Gastric Secretion in Dog G A Hallenbeck—p 329
- Effects of Hyperventilation and of Blood Pressure Changes on Self Sustained Responses of Cerebral Cortex E C Del Pozo and A A P Leão—p 335
- *Effect of Caffeine and Coffee Extract on Activity of Digestive Enzymes Florence Walker—p 343
- Role of Brain Stem in Arterial Hypertension Subsequent to Intracranial Hypertension T M Forster—p 347
- Observations on Circulation in Hind Limbs of Dog Ten Years Following Left Lumbar Sympathetic Ganglionectomy H E Essex, J F Herrick E J Baldes and F C Mann—p 351
- Effect of Sodium Bicarbonate on Gastric Secretion W L Adams, C S Welch and B B Clark, with technical assistance of Dorothy B Blair and J J Romano—p 356
- Stimulation of Gastric Secretion by Neurine E F Williams Jr, C F Hoffman and T P Nash Jr—p 364
- Anaerobic Survival of Adult Animals J F Fazekas and H E Himwich—p 366
- Eserine, Acetylcholine, Atropine and Nervous Integration R Gesell and E T Hansen—p 371
- Occurrence of Vasoconstrictor Substance in Blood During Shock Induced by Trauma Hemorrhage and Burns I H Page—p 386
- Effect of Cobalt on Work Performance Under Conditions of Anoxia S S Dorrance, G W Thorn, M Clinton Jr, H W Edmonds and S Farber—p 399
- Influence of Pregnancy, Hypervitaminosis D and Partial Nephrectomy on Volume of Parathyroid Glands in Rats L Oppen and T Thale—p 406
- Influence of Basal Forebrain Areas on Electroencephalogram R S Morrison, K H Finley and Gladys N Lothrop—p 410
- Studies on Linguomaxillary Reflex R Greenberg and E Gelhorn—p 417
- Electric Potentials of Human Small Intestine F M Forster, J D Helm Jr and F J Ingelfinger—p 433

Effect of Caffeine and Coffee Extract on Activity of Digestive Enzymes—Walker investigated the effect of caffeine and coffee extract on the activity of the digestive enzymes in vitro. The enzymes studied were those which act on carbohydrates, proteins and fats in the digestive tract, namely ptyalin, pancreatic amylase, pepsin, trypsin and pancreatic lipase. It was found that caffeine in concentrations of 20 mg and 40 mg per hundred cubic centimeters of substrate has no effect in vitro on the saccharogenic action of salivary and pancreatic amylases, nor does it affect the digestion of casein by pepsin and trypsin or of olive oil by pancreatic lipase. Coffee extract in the two concentrations studied does not affect the digestion in vitro of casein by pepsin or trypsin. It increases the rate of digestion of starch by the salivary and pancreatic amylases. It retards the digestion of olive oil by pancreatic lipase.

American Journal of Public Health, New York

33 773-924 (July) 1943

- Brucellosis Consideration of Its Epidemiology, Diagnosis and Control, C F Jordan, I H Borts, D M Harris and J R Jennings—p 773
- Some Epidemiologic Aspects of Tuberculosis Determined by Analysis of Sanatorium Records R M Seideman—p 780
- Effect of War on Minds of Children B I Beverly—p 793
- Losses of Vitamins Which May Occur During Cooking of Dehydrated Vegetables Ruth Fenton, Barbara Barnes, J C Moyer, Katherine A Wheeler and D K Tressler—p 799
- Epidemiology of Plague in Ecuador A Macchiavello—p 807
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- Rapid Detection of Production of Acetyl Methyl Carbinol L M Coblentz—p 815
- *Danger of Botulism I C Hall—p 818
- Gearing Dental Public Health to Meet Wartime Conditions W J Pelton—p 821
- Milk Laboratories in War Areas L A Black—p 824
- Encephalitis (Western Equine) in Manitoba—1941 T W Jackson—p 833
- Comparison of Nasopharyngeal Swab and Cough Plate in Diagnosis of Whooping Cough and Hemophilus Pertussis Carriers J J Miller Jr, C W Leach, T M Saito and J B Humber—p 839

Danger of Botulism—According to Hall a recent tabulation shows that during the period 1899 to 1941 as many as 359 outbreaks of botulism with 1,024 cases and 669 deaths were recorded in the United States and Canada. Most of these outbreaks were caused by eating improperly home-canned vegetables. In view of the current plans of many housewives to can as much food as possible, a timely warning may help to prevent a recurrence of the catastrophic outbreaks of botulism which followed the widespread use of the "cold pack" method of home canning during the first world war. This is primarily a problem in public education of housewives and others engaged in canning and serving foods. It is recognized that while the pressure cooker, properly operated, provides the easiest and best method of home canning there is likely to be a shortage of such cookers. Correct operation should be emphasized. The author has recorded three outbreaks of botulism caused by foods supposed to have been sterilized in pressure cookers. He stresses the selection of sound produce, careful cleansing, blanching when indicated, general cleanliness, correct application of intermittent sterilization and the use of other methods of preserving food, notably drying, salting and pickling, in which there is little or no danger from botulism. With regard to consumption the author stresses the significance of turbidity, gas production, softening and odor as criteria of spoilage, the danger of eating or even tasting freshly opened home-canned foods, especially if signs of spoilage are present, the fact that certain foods, notably beets, chili, sometimes beans, and possibly other foods, may show no easily recognizable signs of spoilage even though botulinus toxin is present, the importance of the destruction of botulinus toxin by boiling home-canned foods for at least five minutes before serving, the harmlessness of the spores of *Bacillus botulinus*. Contaminated foods should be boiled in strong lye water to avoid killing poultry and other domestic animals, excessive pollution of the soil with the spores of *Bacillus botulinus* and loss of usable containers. The author stresses prompt reporting of suspicious symptoms to physicians and the saving of remnants of food for epidemiologic and laboratory studies of food poisoning.

Anesthesiology, New York

4 345-464 (July) 1943

- Reflexes from Mouth, Trachea and Esophagus which Stimulate Respiration L C Reid and D E Brace—p 345
- Anesthetic Management of Patients Undergoing Sympathectomy for Hypertension M L Phelps and D L Burdick—p 361
- Peridural Segmental Anesthesia with Intracaine J Abajian Jr—p 372
- Significance of Changes in Lung Volume and Its Subdivisions During and After Abdominal Operations M D Altschule—p 385
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- Development of Anesthesia (Conclusion) T E Keys—p 409
- Narcotic as Factor in Postoperative Nausea and Vomiting J D Steele—p 430

Annals of Otol, Rhin and Laryngology, St Louis

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- Historical Survey of Structure and Function of Cochlea T H Bast and J Shover—p 281
Hereditary Hemorrhagic Telangiectasia F A Figi and C H Watkins—p 330
Anterior Commissure Tendon E N Broyles—p 342
Surgical Operation for Restoration of Laryngeal Function Following Bilateral Paralysis of Vocal Cords. Report of 3 Cases E S Wright—p 346
Problem of Acute Catarrhal Otitis Media G D Hoople and I H Blaisdell—p 359
Preoperative Training for Development of Esophageal Voice in Laryngectomized Patients J W McCall—p 364
Primary Carcinoma of Eustachian Tube Study of Evidence of Its Occurrence L J Lawson—p 377
Pharyngeal Syndrome Probably of Virus Origin A B Murphy—p 391
Chemotherapy in Nose and Throat Diseases D S Cunnings—p 394
Some Functions of Non Acoustic Labyrinth An Experimental Study J G MacKenzie—p 400
Practical Management of Headache A W Proetz—p 409
Palatine Tonsil in Sixth Decade G Kelemen—p 419
Delayed Ossification of Temporal Bone H Brunner and H J Hara—p 444
Improved Method of Narrowing Nose A P Seltzer—p 460
Use of Radium in Conduction Deafness G E Fisher—p 473
Bronchial Lavage in Nontuberculous Infections H L Stitt—p 477

Archives of Dermatology and Syphilology, Chicago

48 1-142 (July) 1943

- Variations in Cutaneous Manifestations of Vitamin A Deficiency from Infancy to Puberty C N Frazier Chuan Kwei Hu and Fu Tang Chu—p 1
Acquired Hypersensitivity to Chlorinated Ethylamine Vesicants: Report of Case L Goldman and R R McNary—p 15
Vitamin A Studies in Cases of Keratosis Follicularis (Darier's Disease) S M Peck A W Glick, H H Sobotta and L Chargin—p 17
Vitamin A Studies in Cases of Ichthyosis S M Peck A W Glick and L Chargin—p 32
Intravenous Administration of Sobisminol Solution Toxicity in Normal and in Syphilitic Rabbits P J Hanzlik and F P Luduena—p 35
Exfoliative Dermatitis with Leukemoid Blood Picture Indistinguishable from Lymphatic Leukemia J F Fraser—p 42
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Porokeratosis (Mibelli) Associated with Cutaneous Horn Dystrophy of Nails and Atrophy of Interosseous Muscles Report of a Case A G Franks and M I J Davis—p 50
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Lupus Erythematosus Tumidus Superficialis Treatment with Tuberculin Report of Case S Irgang—p 60
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Angioid Streaks and Pseudoxanthoma Elasticum R H Ebert—p 75
Complications of Antisyphilitic Therapy in Pregnancy C B Kennedy and V M Henington—p 83

Archives of Internal Medicine, Chicago

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Clinical Manifestations of Weil's Disease with Particular Reference to Meningitis M Clapper and G B Myers—p 18
Pentosturil Associated with Diabetes Mellitus M H Edelman and Miriam Reiner—p 31
Clinical Experience with Mixtures of Protamine Zinc and Unmodified Insulins Preliminary Report Alice G Hildebrand and E H Ryncarson—p 37
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Studies in Syphilis I Review of Incidence of Syphilis in Autopsies on Adults P D Roshan and B Black Schaffer—p 78
Nitrogen Equilibrium and Regeneration of Serum Protein Following Intravenous Use of Amino Acids W J Messinger—p 91
Triacetyl Stenosis Incidence and Diagnosis C F Garvin—p 104
Cholesterol Content of Urine in Patients with Cancer M Bruger with technical assistance of Sylvia B Ehrlich—p 108
Bloods Review of Recent Literature F H Bethell C C Sturgis R A Hettig and O T Mallory Jr—p 115

Weil's Disease and Meningitis—Clapper and Myers report 13 cases of Weil's disease. In 2 both clinical and laboratory evidence of meningitis was observed, in 7 there was an abnormal cellular reaction in the cerebrospinal fluid without clinical signs of meningeal irritation and in 1 meningismus was present without the cerebrospinal fluid showing pleocytosis

Cell counts on the cerebrospinal fluid may reach 1,000 or more per cubic millimeter Polymorphonuclear cells predominate early and lymphocytes later The dextrose content of the cerebrospinal fluid is not altered Yellow discoloration of the cerebrospinal fluid is common in Weil's disease It is at least in part due to bilirubin Retention of urea is frequent Pericarditis, auricular fibrillation or disturbances of conduction may occur in hearts previously normal The plasma prothrombin, although appreciably decreased in most instances, usually does not reach levels sufficiently low to account for the hemorrhagic manifestations Anasarca, the result of hypoproteinemia, may develop Immunotransfusions may be of value in treatment and are worthy of a more extended trial

Mixtures of Protamine Zinc and Unmodified Insulins

—According to Hildebrand and Ryncarson most authors have agreed that for satisfactory control of severe diabetes mellitus protamine zinc insulin must be supplemented by unmodified insulin The use of mixtures was first proposed by Lawrence and Aitken in 1938 At the Mayo Clinic mixtures of the two types of insulin have been used in the routine treatment of severe diabetes and proved satisfactory for a large proportion of diabetic patients There are cases in which adequate control has been difficult and the question of adjusting the amounts of each type of insulin has not been answered The authors studied the effects of injecting various mixtures Observations were made on 2 young women with severe diabetes The results of a study of the dosage of insulin in 100 cases of diabetes taken at random from the files are included The disease in these cases was severe enough to require administration of a mixture of the two types of insulin The authors have not been able to demonstrate that any one ratio of the protamine zinc insulin to unmodified insulin gave an optimal effect However, ratios of protamine zinc insulin to unmodified insulin which lay between the two extremes of 1 1 and 1 5 gave the most satisfactory control, mixtures in which the ratios of protamine zinc insulin to unmodified insulin were 1 2, 1 3, 1 4, 2 3 and 2 5 were capable of adequate control of the blood sugar during the twenty-four hours after their injection The use of a mixture of equal parts of the two insulins resulted in blood sugar curves very similar to those obtained when the dose consisted of protamine zinc insulin alone On the other hand, a mixture of 1 part of protamine zinc insulin to 5 parts of unmodified insulin resulted in an immediate hypoglycemic effect such as might follow the injection of a large dose of unmodified insulin alone Injection of the two types of insulins at separate sites gave not as satisfactory control of the blood sugar level as their injection together The authors tried to eliminate the midmorning lag in hypoglycemic effect of the mixtures of the two insulins by injection of the dose of insulin one hour instead of half an hour before breakfast Although this method eliminated the lag, it did not result in smoother control of the blood sugar during the remainder of the twenty-four hours

Anemia in Hernia at Esophageal Hiatus—Murphy and Hay attempted to determine those symptoms which may lead one to suspect the diagnosis of hiatal hernia, and to record the frequency of anemia in patients with hiatal hernia and its importance as a diagnostic aid The data recorded are based on 72 histories of patients with hiatal hernia of whom 11 were men and 61 women Hiatal hernia is more common in female patients The average age was 60 years Seven of this series had a congenitally short esophagus Six of them were troubled with vomiting or regurgitation after ingestion of food Substernal pain, distress or a feeling of obstruction in this location was present in 5 of these patients Obesity is an important contributory factor to hiatal hernia Increased intra-abdominal pressure, which may be produced by excess fat in the omentum, a large fibroid or a pregnant uterus may cause herniation Rigler emphasized the importance of pregnancy as a factor Slightly more than one half of this series were women who had been pregnant one or more times Trauma is undoubtedly responsible in some cases Pain was the symptom most frequently stressed by the patients Anemia rates second to pain in order of frequency Other symptoms were vomiting nauca gas in the stomach fatigability diarrhea heartburn constipation anorexia headache and indigestion A characteristic his

tory is as follows. After the ingestion of food, particularly solid or coarse, there is a feeling of obstruction or pain (ache or squeeze) in the substernal or the upper epigastric region. This may be followed by regurgitation or vomiting, with relief of symptoms. Vomiting and regurgitation of food not associated with nausea are characteristic complaints. Hiatal hernia should be more frequently included in the differential diagnosis of pathologic conditions in the upper part of the abdomen. An analysis of the blood was made in 67 of this series. A diagnosis of pernicious anemia was made in 7. In 2 other cases there was severe macrocytic anemia with a high color index. If one excludes the 7 patients with pernicious anemia, there were 40, or 66 per cent, with anemia of some degree. Anemia is so commonly associated with hiatal hernia that it must be considered an important aid in the diagnosis. It is usually hypochromic and the result of hemorrhage arising from ulceration of the esophageal or of the gastric mucosa or from congestion of the mucous surfaces. Surgical intervention may be necessary in hiatal hernia, particularly when there is incarceration of the stomach in the esophageal hiatus with symptoms of obstruction and recurrence of severe hemorrhage. Medical management should include a diet low in roughage, with avoidance of solid foods, later the diet should be increased to include some moderately rough and coarse foods. It may include pureed vegetables. It should be divided into five or six small meals daily. At no time should the stomach be overloaded. Loss of weight will be desirable in the obese. Patients should rest before meals. The patient should not recline soon after a meal. Those whose symptoms occur at night or on reclining will be benefited by sleeping in a semireclining position. The patient should be cautioned against lifting heavy objects or lifting any object from a bending over position. All straining and physical effort should be avoided. The hypochromic anemia should be treated with optimal doses of iron.

Archives of Ophthalmology, Chicago

30 1-166 (July) 1943

- Standardization and Checking of Schiøtz Tonometers A Posner—p 1
Corneal Transplantation R A Perritt—p 14
Bilateral Metastatic Carcinoma of Choroid A J Bedell—p 25
Congenital Paralysis of Lateral Rotators of Eyes with Paralysis of Muscles of Face A M Hicks—p 38
Absorption of Infra Roentgen (Bucky) Rays of Various Qualities by Anterior Portions of Eyeball F Sagher and E Sagher—p 43
Association Between Anisokonia and Anomalous Binocular Space Perception K N Ogle—p 54
*Local Toxic Effects of Sulfanilamide and Some of Its Derivatives J G Bellows with laboratory assistance of R Gluckman—p 65
Physiology of Aqueous in Completely Irsectomized Eyes H G Scheie, Elinor Moore and F H Adler—p 70
Structural Changes in External Geniculate Body of Rat Following Removal of Eyes R R Chace—p 75
Homatropine Paredrine Emulsion as Cycloplegic E Yasuna—p 87
Heterochromia of Iris L Hess—p 93
Intraocular Hemorrhages in Choline Deficiency J G Bellows and H Chinn—p 105
Bacteriologic Observations in Infections of Eye C Weiss—p 110

Local Toxic Effects of Sulfonamide Compounds—Bellows investigated the effects of local application of the sulfonamide drugs on the eyeball. The corneas of young adult rabbits were anesthetized by means of a 4 per cent cocaine hydrochloride solution, which was chosen not only for its anesthetic properties but for its drying effect on the epithelium. The drying effect was desired because it facilitated removal of the epithelium, an operation which was accomplished by immobilization of the eyeball with a fixation forceps and rubbing of the cornea with dry gauze. The cornea was stained with fluorescein to make certain that the epithelium was completely removed. Sulfanilamide, sulfathiazole, sulfapyridine and sulfadiazine were used in the form of powder, a 5 per cent ointment and a 20 per cent suspension. The drug to be tested was applied three times daily to one eye, while the other eye served as a control. These experiments yielded additional support to the contention that the sulfonamide compounds have an unfavorable effect on actively growing epithelium as shown by a greater than twofold increase in the time required for epithelial regeneration. They increase the amount of scarring. Therefore the local use of these drugs should be avoided in the treatment of injuries of the face or cornea.

Arkansas Medical Society Journal, Fort Smith

40 29-42 (July) 1943

War and Medical Education J H Musser—p 29

40 43-58 (Aug) 1943

Industrial Dermatoses D W Goldstein—p 43

Connecticut State Medical Journal, Hartford

7 453-516 (July) 1943

- Treatment of Scoliosis J R Cobb—p 467
Ischuria from Incarceration of Retrodisplaced Pregnant Uterus H C Taylor—p 472
Cold Agglutination of Own Serum, Treated by Heparin Intravenously Case J S Nickum—p 475
A Psychiatrist Looks at War and Peace C C Burlingame—p 476

7 517-610 (Aug) 1943

- Resistance to Change as Contribution to Medical Progress L Clendenning—p 519
Mullerian Duct Cysts C L Deming and R R Bernheke—p 527
Various Schools of Psychotherapy A A Brill—p 530
Eight Years Experience in Cancer in Twenty One Connecticut Hospitals Eleanor J MacDonald—p 536
Male Sterility W W Williams—p 538
Stromal Endometriosis Case Report L F Middlebrook—p 544

Endocrinology, Springfield, Ill

33 1-66 (July) 1943

- Rapid Test for Pregnancy Gonadotropins on Basis of Induced Ovulation in Mice H O Burdick, H Watson, V Ciampa and T Ciampa—p 1
Inhibition of Estrogenic Effects on Reproductive System of Male Rat by Testosterone Injections C K Weichert and H B Hale—p 16
Beneficial Effect of Estrogens on Altitude Tolerance of Rats B D Davis and B F Jones—p 23
Effect of Gonadotropic Hormones on Intracocular Prostatic Implants in Male Rabbit B Krichesky, J A Benjamin and B Rosenberg—p 32
Androgens and Experimental Menstruation in Monkey (Macaca mulatta) F L Hisaw—p 39
Variables Affecting Biologic Assay of Estrogens L I Pugsley and C A Morrell—p 48

Indiana State Medical Assn Journal, Indianapolis

36 379-424 (Aug) 1943

- Allergic Aspects of Dermatology S W Becker—p 379
*Intradermal Vaccine Therapy in Brucellosis D L Urschel—p 385
*Treatment of Chronic Brucellosis with Sulfasuxidine N Davis—p 390
Treatment and Rehabilitation of Hard of Hearing Child J K Leasure—p 391
The Sulfonamides F F Yonkman—p 394

Intradermal Vaccine Therapy in Brucellosis—According to Urschel intradermal injection of brucella vaccine or brucellergen causes the development of specific antibodies in the blood stream of the patient. The significance of these demonstrable antibodies in resistance to infection has not been demonstrated. In a small series of cases vaccine given by the intradermal route has given satisfactory clinical response. A mixed heat-killed stock vaccine was used. After the diagnosis has been made, treatment is begun with intradermal injections at five to seven day intervals (in an occasional case at three to five day intervals). The vaccine is injected into the forearm or into the medial surface of the thigh. Twenty intradermal injections of vaccine was the average in this group. Twenty-eight patients have received treatment by intradermal vaccine alone and three have had a combination of intradermal and subcutaneous vaccine. In 87.5 per cent of patients the intradermal administration of vaccine alone got results which were classified as fair, good or excellent. The intradermal route offers several advantages. The amount of vaccine necessary is small. The injections are relatively painless. The amount of reaction can be carefully watched and measured. Systemic reactions are few.

Succinylsulfathiazole in Chronic Brucellosis—Davis suggests that an intestinal antiseptic might solve the therapeutic problem of involvement of the digestive tract in patients with brucellosis. Since September 1942 the author has used succinylsulfathiazole for all patients with chronic brucellosis. To date he has used this drug in the treatment of 18. Ten patients are apparently cured, 6 are much improved but still under treatment, and 2 have up to the present time shown no response to the drug. The author is unable to give any explanation of the two failures.

Iowa State Medical Society Journal, Des Moines

33 295-368 (July) 1943

- Public Opinion and Professions V M Hancher—p 295
Intraocular Neuritis E C Montgomery—p 298
Public Health Today F J Underwood—p 301
Barbiturate Poisoning J W Lawrence—p 303

33 369-408 (Aug) 1943

- Pelvic Surgery as Related to General Practice V S Counsellor—p 369
*Malaria Endemic in Iowa A W Bennett—p 372
Kenny Treatment in Acute Poliomyelitis Report of First Year at Iowa Lutheran Kenny Cottage J F Dyson—p 375
Mitral Endocarditis and Coronary Thrombosis F P McNamara—p 379

Malaria in Iowa—Bennett reports 4 cases of malaria. The histories indicated that the onset occurred the same day. The prodromal symptoms were similar. Each patient had the initial chill, which was severe and prolonged and was followed by temperatures reaching from 104 to 105 F with subsequent sweats and weakness. The four persons had met at a picnic in a lake resort. They recalled that the mosquitoes had been plentiful. It seems possible that the inoculation occurred at this time. It is not clear where the mosquito or mosquitoes became infected. Two sources seem probable. Lake McBride is a state park and many people from a distance visit it. Some one who previously had had malaria and was a carrier might have visited there and the mosquito or mosquitoes fed on him and thus became infected. The other possible source is that in many medical centers, among them the State University of Iowa Hospital, certain patients are routinely treated with malarial inoculations. A strain of *Plasmodium vivax* is used for this purpose, the same strain was detected in these patients. The treatment of malaria proved difficult. During the initial attack these patients were all treated promptly and energetically with quinine and quinine as soon as the diagnosis was confirmed by blood findings. During each of the following relapses they were treated with quinine, plasmoquin and quinine. Each had from three to four recurrences, all verified by finding the parasite in the blood smears.

Journal of Bone and Joint Surgery, Boston

25 503-730 (July) 1943

- Correlation of Clinical and Anatomic Facts Leading to Conception of Etiology of Congenital Hip Dysplasias President's Address C E Badgley—p 503
Some Surgical Lessons of War W R Bristow—p 524
Treatment of Difficult and Unusual Nonunions with Special Reference to Bridging of Defects H B Boyd—p 535
Bone Changes in Acute and Chronic Scurvy An Experimental Study S W Banks—p 553
Importance of Leaving a Good Amputation Stump A B Lemesurier—p 566
Use of Cellophane as Interposition Membrane in Synovectomy D C McKeever—p 576
Paralytic Scoliosis A Farkas—p 581
Etiology of Undescended Scapula and Related Syndromes D Engel—p 613
Stabilization of Articulation of Greater Multangular and First Metacarpal D B Slocum—p 626
Pin Distraction as Cause of Nonunion A G Davis—p 631
Experimental Uses of Sulfonamides and Other Drugs in Acute Purulent Arthritis C J Frankel and N W Larkum—p 644
Kenny Treatment for Infantile Paralysis Comparison of Results with Those of Older Methods of Treatment R. Bingham—p 647
Recurrent Dislocation of Shoulder Joint Combination Procedure Preliminary Report F W Ilfeld and H G Holder—p 651
Choice of Anesthetic Agent and Care of Patient in Relation to Anesthesia in Orthopedic Surgery J Lyford—p 659
Care of Knee Following Excision of Meniscus S R Terhune T S Eddleman S B Thompson and B S Read—p 663
Fractures of Neck of Metacarpal I Redler—p 670
*Etiology and Surgical Treatment of Intractable Pain About Fourth Metatarsophalangeal Joint (Morton's Toe) R. T. McElvenny—p 675
Self Adjusting Foot Piece for Preventing or Correcting Equinus Deformity When Traction is Applied to Lower Extremity L. D. Baker and F J Reed—p 680

Pain in the Fourth Metatarsophalangeal Joint (Morton's Toe)—According to McElvenny a typical case of Morton's toe is characterized by severe lancinating pain originating in the region of the fourth metatarsophalangeal joint. The pain is shooting in character and may travel up the calf as far as the knee. The pain comes on in paroxysms of varying intensity and in many subjects is accompanied by an almost uncontrollable desire of the victim to remove the shoe. The

disease occurs in men and in women in the proportion of about six to ten. This condition was first described by Morton of Philadelphia in 1876. The condition is often resistant to conservative treatment. It is caused by a tumor involving the most lateral branch of the medial plantar nerve. Careful palpation will usually reveal the tumor, which lies high in the web between the third and fourth toes. If symptoms justify it, excision of the tumor should be done. The author reports 11 cases treated by operation. Of the twelve tumors removed from 11 patients, five have had a microscopic study and appear to be either neurofibromas or angioneurofibromas. Grossly they are fatty and soft on the outside and firm, white and fibrous as the center is approached. The plantar nerve is embedded in the center.

Journal of Clinical Investigation, Boston

22 471-634 (July) 1943

- Relationship of Dehydration and Overhydration of Blood Plasma to Collapse in Management of Artificial Fever Therapy H R Brown Jr W F Clark N Jones Johanna Walther and S L Warren—p 471
Fractionation of Serum and Plasma Proteins by Salt Precipitation in Infants and Children 1 Changes with Maturity and Age 2 Changes in Glomerulonephritis 3 Changes in Nephrosis M Rapoport, M I Rubin and D Chaffee—p 487
Prolongation of Action of Subcutaneously Injected Medicines in Man F F Foldes—p 499
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Skin Resistance Changes and Measurements of Pain Threshold H L Andrews—p 517
Study of Volume of Blood in Congestive Heart Failure Relation to Other Measurements in 15 Patients G R. Meneely and N L Kaltreider—p 521
Quantitative Relationship Between Basal Metabolic Rate and Thyroid Dosage in Patients with True Myxedema A W Winkler J Criscuolo and P H Lavietes—p 531
Tolerance to Oral Thyroid and Reaction to Intravenous Thyroxine in Subjects Without Myxedema A W Winkler P H Lavietes C L Robbins and E B Man—p 535
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Defect in Metabolism of Tyrosine and Phenylalanine in Premature Infants III Demonstration of Irreversible Conversion of Phenylalanine to Tyrosine in Human Organism S Z Levine Margaret Dann and Eleanor Marples—p 551
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Studies Regarding a Glutamine-like Substance in Blood and Spinal Fluid Including a Method for Its Quantitative Determination M M Harris with technical assistance of Roslyn T Roth and Ruth S Harris—p 569
Effect of Insulin Hypoglycemia and Glucose Administration on Level of Glutamine-like Substance in Blood Serum M M Harris with technical assistance of Roslyn T Roth and Ruth S Harris—p 577
Effect of Testosterone and Allied Compounds on Mineral Nitrogen and Carbohydrate Metabolism of Girl with Addison's Disease N B Talbot, A M Butler and E A MacLachlan—p 583
Mode of Excretion of Creatine and Creatinine Metabolism in Thyroid Disease N A Tierney and J P Peters—p 595
Locus Action of Parathyroid Hormone Experimental Studies with Parathyroid Extract on Normal and Nephrectomized Rats T H Ingalls G Donaldson and F Albright—p 603
Treatment of Burns by Closed Plaster Method with Certain Physiologic Considerations Implicit in Success of This Technic W W L. Glenn Helen H Gilbert and C K Drinker—p 609
Changes in Electrophoretic Pattern in Lymph and Serum in Experimental Burns G E Perlmann W W L Glenn and D Kaufman—p 627

Journal of Experimental Medicine, New York

78 1-90 (July) 1943

- Antigenic Properties of Native and Regenerated Horse Serum Albumin J O Erickson and H Neurath—p 1
Synergistic Action of Hemophilus Influenzae Swi and Swine Influenza Virus on Chick Embryo II F B Bang—p 9
Influence of Age of Host and Temperature of Incubation on Infection of Chick Embryo with Vesicular Stomatitis Virus B Sigurdson—p 17
Studies on Site of Antibody Formation in Rabbits Following Intracutaneous Injections of Pneumococcus or of Streptococcus Vaccine P F DeGara and D M Angevine—p 27
Hypotension and Loss of Pressor Response to Angiotonin as Result of Trauma to Central Nervous System and Severe Hemorrhage I H Page—p 41
Studies in Sensitization to Skin I Production of Antibodies to Skin by Means of Synergistic Action of Homologous Skin Antigen and Staphylococcus Toxin R Hecht M B Sulzberger and H Weil—p 59
Studies on Experimental Hypertension VII Purification of Renin A J Katz and H Goldblatt—p 67
Metabolism of Ischemic Kidney I Respiration and Oxidative Activity of Ischemic Kidney S B Racker—p 75

Journal of Immunology, Baltimore

46 347-504 (June) 1943

- Immunochemistry of Allergens II Antigenic Studies by Dale Method of Electrophoretic Fractionation Products of Protein Carbohydrate Fraction CS 1A from Cottonseed E J Coulson, J R Spies and H Stevens—p 347
- Id III Anaphylactogenic Potency of Electrophoretic Fractionation Products of CS 1A from Cottonseed E J Coulson and J R Spies—p 367
- Id IV Effect of Dilute Acid on Anaphylactogenic Activity, Specificity and Reagin Neutralization Capacity of Cottonseed Allergenic Fractions E J Coulson and J R Spies—p 377
- Evaluation of Antigenicity of Tetanal Toxoid W L Koerber—p 391
- Cross Protection Between Heterologous Agglutinogenic Types of Beta Hemolytic Streptococci of Group A II An Immunogenic Group of Four Types Alice C Evans—p 399
- Use of Mice in Testing of Antigenic Power of Tetanal Toxoid W L Koerber and Gertrude E Mook—p 411
- Studies of Antipneumococcal Serum IV Maximally Reactive Proportions of Antigen and Antiserum in Precipitation and Complement Fixation Christine E Rice—p 427
- State of Salmonella Problem S Bornstein—p 439

Journal of Lab and Clinical Medicine, St Louis

28 1175-1294 (July) 1943

- Verification Test in Serology of Syphilis R L Kalin—p 1175
- Production of Chronic Hypertension in Dogs by Progressive Ligation of Arteries Supplying the Heart H R Fishback, F E Dutra and E T McCarty—p 1187
- Human Skin as Conductor of 60 Cycle Alternating Current of High Intensity, Studied on Electroshock Patients H Lowenbach and J E Morgan—p 1195
- Some New Aspects of Morphine Action Influence of Prostigmine Methylsulfate on Excretion D Slaughter, C R Treadwell and J W Giles—p 1199
- Immunologic and Toxic Properties of Casein Digest as Prepared for Parenteral Administration H C Hopps and J A Campbell—p 1203
- *Caffeine Withdrawal Headache R H Dreisbach and C Pfeiffer—p 1212
- Etiology of Migraine Syndrome—Physiologic Approach C Pfeiffer, R H Dreisbach, C C Roby and H G Glass—p 1219
- Chronic Brucellosal Type of Ankylosing Spondylitis E Goldfain—p 1226
- Significance of Gross Character of Sputum in Prognosis of Pneumococcal Pneumonia A W Frisch, A E Price and G B Myers—p 1231
- Comparative Accuracy of Closed Circuit Bedside Method and Open Circuit Chamber Procedure for Determination of Basal Metabolism R C Lewis, Alberta Iliff and Anna Marie Duval—p 1238

Caffeine Withdrawal Headache—Dreisbach and Pfeiffer attempted to produce and study caffeine withdrawal headache. In a survey of 128 migraine patients 25 stated that lack of their usual coffee intake would result in headache. Five patients volunteered the information that the headache was not of the migraine type. The authors attempted to produce headache by administration of caffeine over a suitable period, usually a week, and then abruptly withdrawing the drug. In 55 per cent of thirty-eight trials on 22 subjects, headache as extreme in severity as the subjects had ever experienced was produced by the sudden withdrawal of caffeine. In 29 per cent of the trials the headache was definite but did not require treatment. In 16 per cent of the experiments little or no headache resulted. The headache is without scotomas, slow in onset and central in origin, becoming generalized after four to six hours, it may be accompanied by nausea and vomiting. In migraine subjects the headache differs from their typical migraine headache. The blood studies indicate that a lowered serum calcium, an elevated serum phosphorus and possibly an increase in blood volume accompany the headache.

Journal-Lancet, Minneapolis

63 193-224 (July) 1943

- *Rocky Mountain Spotted Fever Nine Year Study of Wyoming Cases G E Baker—p 207
- War Wounds of Abdomen D L Borden—p 213
- Practical Problems in Blood Grouping and Blood Transfusion R F Peterson—p 215

Rocky Mountain Spotted Fever—Baker points out the close resemblance of endemic typhus to Rocky Mountain spotted (tick) fever. The degree of protection afforded by vaccine and the duration of such protection vary. As a rule those vaccinated in the spring of the year retain a considerable degree of immunity for at least the remainder of that year. Treatment of tick fever is purely symptomatic and supportive in character.

Bed rest with good nursing care is necessary. The author had occasion to study the various aspects of tick fever in a section of Wyoming where the disease occurs with considerable frequency. In 1934 Kamp and the writer received encouraging reports of responses obtained in typhus by use of neoarsphenamine dissolved in aqueous solution of metaphen. In the spring and summer of 1934 they used this treatment in 9 moderately severe cases of the disease. None of the patients succumbed to their illness. Since that time an average of 3 to 4 cases of tick fever have been under the writer's care each season. During the past eight years recovery has occurred in all cases so treated. A combination of the bactericidal action of metaphen, together with the spirocheticidal action of neoarsphenamine, on a micro-organism which is bacterium-like in character yet has staining properties similar to those displayed by spirochetes may be the secret of the success. In this treatment 0.3 Gm of neoarsphenamine was dissolved in 10 cc of an aqueous solution of 1,000 metaphen. The mixture was warmed and injected slowly into a vein. Administration is repeated at three or four day intervals. Three or four injections have customarily been sufficient to ameliorate the clinical picture so as to insure ultimate recovery. Should severe renal injury exist as a result of the infection, careful consideration must then be given the question as to whether the use of these medicaments is justified.

Journal of Nutrition, Philadelphia

26 1-104 (July) 1943

- Further Studies on Symptoms of Manganese Deficiency in Rat and Mouse M E Shils and E V McCollum—p 1
- Role of Dietary Protein in Hemoglobin Formation Aline Underhill Orten and J M Orten—p 21
- Effect of Concentration on Absorption of Vitamin A A G Reifman, Lois F Hallman and H J Deuel Jr—p 33
- Nutritive Differences in Rations Containing Unhydrogenated or Hydrogenated Fats as Shown by Rearing Successive Generations of Rats H G Miller—p 43
- Amino Acids Required for Growth in Mice and Availability of Their Optical Isomers C D Bauer and C P Berg—p 51
- Biotin Content of Meat and Meat Products B S Schweigert, E Nielsen, J M McIntire and C A Elvehjem—p 65
- *Retention of Vitamins in Meats During Storage Curing and Cooking B S Schweigert, J M McIntire and C A Elvehjem—p 73
- Studies of Calcium and Phosphorus Metabolism in Chick I Comparative Effect of Vitamins D₂ and D₃ and Dihydrocholesterol Given Orally and Intramuscularly E W McChesney—p 81
- Vitamin K and Prothrombin Levels with Special Reference to Influence of Age F W Stanler, R T Tidrick and E D Warner—p 95

Vitamins in Meat During Storage, Curing and Cooking—For the experiments carried out by Schweigert and his associates pork hams were taken from carcasses weighing approximately 190 pounds. Paired hams were used throughout the experiment. Two fresh hams were analyzed immediately and the two corresponding hams were stored for fourteen days in a freezer (−4 C) in order to determine the vitamin retention during storage. Two different hams were stored for fourteen days and the corresponding two hams were cured commercially in order to study vitamin retention during the curing process. Four additional hams were cured. Two of these were analyzed uncooked and the two corresponding hams were used for cooking tests. The authors found that average retention during storage is 92 per cent for the thiamine and nicotinic acid and 85 per cent for the riboflavin. The retention in curing was found to be 73 per cent for the thiamine, 84 per cent for the nicotinic acid and 92 per cent for the riboflavin. The average retention in the meat alone after roasting was 58 per cent for thiamine, 79 per cent for the nicotinic acid and 74 per cent for the riboflavin, after frying, 86 per cent for the thiamine, 85 per cent for the nicotinic acid and 77 per cent for the riboflavin. The average total retention in the meat plus drippings after roasting was 70 per cent for thiamine, 96 per cent for the nicotinic acid and 84 per cent for the riboflavin, after frying, 92 per cent for the thiamine, 96 per cent for the nicotinic acid and 86 per cent for the riboflavin. The over-all retention of the vitamins from fresh stored to cured fried samples agrees very well with the vitamin retention during curing and frying. From 10 to 15 per cent of each of the vitamins was found in the drippings from roasting and frying. A higher retention of thiamine in the meat alone was found after frying, as compared with roasting, braising and broiling.

Journal Pharmacology & Exper Therap, Baltimore

78 215-320 (July) 1943

- Effect of Sodium Diphenyl Hydantoinate (Dilantin Sodium) on Utilization of Ascorbic Acid by Guinea Pigs A D Emmett, Eva R Hartzler and R A Brown—p 215
- Studies on Chemistry and Pharmacology of Melanophore Hormone of Pituitary Gland G Chen and E M K Geiling—p 222
- Studies on Veratrum Alkaloids. III Qualitative and Quantitative Differences in Action of Cevine and Veratridine R Mendez and G Montes—p 238
- Chronic Selenium Poisoning in Dogs and Its Prevention by Arsenic. M Rhian and A I Moxon—p 249
- Dihydroxypropyl Bismuthate. Experimental Studies of New Bismuth Compound L M Wheeler—p 265
- *Effect of Cholesterol Administration on Anesthesia F F Foldes and H K Beecher—p 276
- Treatment of Standardized and Crude Histamine Shock in Dogs with Solutions of Methyl Cellulose and Sodium Bisulfite Sulfate W C Hueper and C T Ichimiowski—p 282
- Narcosis Induced by Carbon Dioxide at Low Environmental Temperatures. J H Barbour and M H SeEVERS—p 296
- Stimulating Action of Colchicine on Pituitary Induced Ovulation of Frog M K McPhail and K M Wilbur—p 304
- Studies on Antimalarial Drugs. Distribution of Quinine in Tissues of Fowl F E Kelcy, Frances K Oldham and E M K Geiling—p 314

Effect of Cholesterol Administration on Anesthesia—Foldes and Beecher were able to confirm for ether and a barbiturate the principal conclusion of Starkenstein and Weden that the depth and duration of anesthesia can be greatly increased by the previous injection of cholesterol. The cholesterol effect appears to be a potentiation, the possibility that it may be additive cannot be eliminated at this time. In searching for an explanation of the cholesterol action one must look beyond physical solubility and transport effects. (a) Both olive oil and cholesterol increase the effectiveness of ether, but only cholesterol increases the effectiveness of the barbiturate. Olive oil has no effect on the barbiturate. (b) Ether has the same order of solubility in both cholesterol and lecithin yet cholesterol increases the anesthetic effect of ether (and barbiturate) while lecithin does not.

Missouri State Medical Assn Journal, St Louis

40 191-240 (July) 1943

- Plans for Postwar Medical Service M Fishbein—p 191
- Value of Strophanthin in Coronary Disease R Uhlmann—p 194

40 241-268 (Aug) 1943

- More Extensive Operation for Hypertension: Report of Cases R M Klemmer and R D Woolsey—p 241
- Uses and Abuses of Sulfa Drugs R O Muether—p 245

New England Journal of Medicine, Boston

229 33-96 (July 8) 1943

- Physiologic Considerations in Treatment of Nephritis G W Thorn—p 33
- Meningococcal Meningitis with Purulent Arthritis. Report of Case J P Cattell—p 49
- Clinical Catalytic Chemistry W T Salter—p 53

229 97-132 (July 15) 1943

- *Thiouracil in Treatment of Thyrotoxicosis R H Williams and G W Bissell—p 97
- Spina Bifida and Cranium Bifidum V Arnold Chiari Malformation Study of 20 Cases F D Ingraham and H W Scott Jr—p 108
- Modification of Intestinal Motility by Drugs F J Ingelfinger—p 114

Thiouracil in Treatment of Thyrotoxicosis—Recently substances have been described which induce goiter presumably by their direct action on the thyroid. Such substances are the sulfonamides, thiourea and thiourea derivatives. Following their administration to certain animals, particularly rats, thyroid enlargement results in a few days. Microscopically, one finds hyperplasia of the acinar cells and a decrease in the colloid of the follicles. A drop in the basal metabolic rate occurs. These changes can be prevented by the administration of desiccated thyroid or thyroxine. They can also be prevented by hypophysectomy but not by the administration of iodine. In rats fed sulfaguanidine, changes in the pituitary glands similar to those following thyroidectomy take place. These facts suggest that the drugs act directly on the thyroid gland inhibiting the

production of thyroxine, this in turn leading to a decrease in the body metabolism and to an increased activity of the pituitary gland. The authors have been studying some of the pharmacologic and therapeutic effects of thiouracil in patients with thyrotoxicosis. None of the patients were given iodine. Thiouracil was given by mouth, usually in doses of 0.2 Gm. The authors give detailed histories of 9 unselected patients with thyrotoxicosis whom they treated with thiouracil. In each case the toxic manifestations disappeared and the basal metabolic rate returned to a normal range. Blood iodine studies conducted on 4 patients showed in each a fall of the protein bound iodine to a low normal or subnormal level. Studies have been performed of the blood levels of thiouracil and its excretion in the urine. No serious complications from the drug have been encountered, but all patients receiving the drug should be carefully followed. This report deals only with the early changes resulting from the treatment with thiouracil.

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- Oliver Wendell Holmes and Puerperal Fever F C Irving—p 133
- Care of Victims of Coconut Grove Fire at Massachusetts General Hospital O Cope—p 138
- Gastrointestinal Symptoms of Heart Disease L M Hurxthal—p 148
- Orthopedic Surgery W A Rogers—p 152

229 191-228 (July 29) 1943

- *Diaphragmatic (Hiatus) Hernia. Clinical Study W R Ohler and M Ritvo—p 191
- Acute Laryngotracheobronchitis in Children J A V Davies—p 197
- Diagnosis of Virus and Bacterial Pneumonia in Children M Finland—p 199
- Use of Sulfonamides in Treatment of Respiratory Infections in Children C A Janeway—p 201
- Lateral View in Roentgenologic Diagnosis of Lesions of Colon E G Wissing and R M Lowman—p 207
- Orthopedic Surgery (concluded) W A Rogers—p 211

Diaphragmatic (Hiatus) Hernia—Ohler and Ritvo collected from the records of the Boston City Hospital 128 cases of diaphragmatic (hiatus) hernia during a period of less than four years. They conclude that the condition is not rare. The symptoms are such as to justify its inclusion in the differential diagnosis of anterior chest or upper abdominal complaints or both. The typical symptom of hiatus hernia is a sense of epigastric pain, distress and fullness coming on shortly after or during meals. Often there is difficulty in swallowing solid food. Frequently there is epigastric pain or distress at night or when the patient is in the recumbent position. In most cases the pain is relieved when the patient assumes the upright position. There may be substernal pain or dyspnea or both—generally but not always unrelated to exertion. The pain may present radiation similar to that of angina pectoris, but just as frequently its radiation is atypical. The patient with hiatus hernia may bleed. The bleeding may explain the anemia characteristic of chronic blood loss. The x-ray examination should always begin with fluoroscopic observations without the opaque meal. A careful search is made for a gas containing shadow lying at or slightly above the level of the diaphragm. This is of particular importance, since in some cases the hernia reduces itself and disappears on ingestion of the opaque meal. Observations are first made with the patient breathing quietly, then in full inspiration and forced expiration. The frontal and oblique positions are used in the erect, prone and supine positions. When the opaque meal is administered, the fluoroscopic observations are best begun with the patient in the erect position. The great majority of hernias are not demonstrable in this position. The lesion will not be visualized if the x-ray observations are carried out only with the patient upright. Treatment is essentially medical especially in patients with small lesions. A bland high vitamin diet divided into four or six feedings is desirable. Food should not be given before bedtime. Assumption of the upright position after eating or for a few minutes during the course of the meal is often helpful. Sleeping at an angle of 45 degrees has relieved distressing night symptoms. Alkalis and antispasmodic drugs are frequently useful. Surgery is indicated when medical measures fail especially for patients having intractable pain or hemorrhagic tendencies.

New Jersey Medical Society Journal, Trenton**40 213-256 (June) 1943**Plasma and Blood Banks in Wartime E. M. Katzin—p. 218
Stricture of Rectum F. C. Yeomans—p. 222**40 257-296 (July) 1943**Opifereque per Orbem Dicor Presidential Address. E. J. Marsh—p. 260
Essential Procedures in Immediate Care of Fresh Major Traumatic Wounds J. M. Carlisle—p. 263
Tuberculosis in Wartime and After E. Frankel—p. 266
Traumatic Epilepsy Pathologic Factors K. W. Ney—p. 270
Pregnancy and Labor Complicated by Heart Disease B. Tunis—p. 276**Northwest Medicine, Seattle****42 151-178 (June) 1943**Psychoneuroses of War Care of Ill and Injured After Evacuation from Combat Zones K. M. Bowman—p. 154
Military Mental Conservation and Rehabilitation N. K. Rickles—p. 158
Medical Civilian Practice in Wartime J. E. Hunter—p. 160
Surgical Practice in Wartime E. A. Nixon—p. 161
Medical Service in Industry H. J. Whitacre—p. 163
War Civilian Security Program C. M. Smith—p. 165
Endemic and Epidemic Diseases Including Tropical Disease T. B. H. Anderson—p. 167**42 179-206 (July) 1943**Control of Blood Coagulability with Coumarin and other Drugs J. E. Rhoads, J. Walker and Lillian Panzer—p. 182
Surgical Experiences with Malignant Tumors I. W. Baker—p. 186
Nonunion of Femoral Neck Fractures L. H. Edmunds—p. 190
Endometrioma of Sigmoid R. S. Smith—p. 192
Functional Supernumerary Mammary Glands J. V. Schwind—p. 195
Administration of Histamine in Allergic Conditions W. N. M. Girling—p. 196
Meningococcal Meningitis P. V. Woolley and T. Parry—p. 197**Ohio State Medical Journal, Columbus****39 609-704 (July) 1943**Nutrition and Child Health A. A. Weech—p. 625
Industrial Absenteeism Its Medical Phase R. F. Jukes—p. 629
History and Incidence of Rabies E. R. Shaffer—p. 631
Diagnosis, Treatment and Prevention of Chigger Bites H. J. Parkhurst—p. 639
Allergy to an Estrogen Dermatitis from Estradiol 17 Carbethoxyate R. D. Barnard—p. 642
Significance of Rh Factor in Intragroup Transfusion Reactions and Erythroblastosis Fetalis Report to Physician in Practice A. P. Falkenstein—p. 644
Misconceptions Concerning Peripheral Vascular Diseases D. M. Palmer—p. 647
Role of Aluminum in Nutrition J. Forman—p. 651
Addison's Disease Due to Cytotoxic Contraction of Adrenal Cortex with Sudden Death Four Days After Appendectomy T. C. Luppely—p. 652**Oklahoma State Medical Assn Jour, Oklahoma City****36 231-276 (June) 1943**Medical Management of Diseases of Gallbladder and Biliary Tract. F. C. Rewerts—p. 231
Simplified Treatment for Impetigo Neonatorum C. E. White—p. 234
Treatment of Burn Cases off the U. S. S. Wasp R. G. Jacobs—p. 235
Consideration of Kenny Treatment of Infantile Paralysis D. H. O'Donoghue—p. 236
Private Practitioner and War Industry D. H. Macrae—p. 239**36 277-322 (July) 1943**Spontaneous Pneumothorax in Apparently Healthy Young Adults J. F. Moorman—p. 277
*Rocky Mountain Spotted Fever P. Sizemore—p. 282
Plasma Bank A. R. Wiley—p. 285
Neuropsychiatric Problems Arising in Civilian Population J. A. Willie—p. 287

Rocky Mountain Spotted Fever—Sizemore reports observations in 7 cases of Rocky Mountain spotted fever. The cases occurred in a family in the town of Armstrong in Bryan County, which is located in the south central section of Oklahoma. The family lived here for several years but had moved into a new, unpainted, green lumber house only a short distance from their previous home. The household consisted of a couple, their 3 children and the wife's mother. The latter, aged 67, died of the illness contracted by all of them. All developed what was first suspected to be typhus but later was identified as Rocky Mountain spotted fever. The attending physician, Dr. Flythe, aged 44, died of the disease. A man aged 47 who had

stayed at the home of the family while the first 3 members were ill became ill and died. The rash suggested that this fatality was also caused by the Rocky Mountain spotted fever. Questioning brought out the fact that all members of the household had been bitten repeatedly since moving to the new house by ticks which infested the yard. The gopher proved to be the ticks' host in the Armstrong area. The use of vaccine in infested areas each year is indicated. This is best given in late winter or early spring. The vaccination should be completed at least ten days before the first expected exposure. The vaccine is not recommended for therapeutic use.

Pennsylvania Medical Journal, Harrisburg**46 1009-1120 (July) 1943**Summary of Endocrine Effects in Advanced Prostatic Cancer C. B. Huggins—p. 1023
Clinical Observations on Estrogenic Therapy in Prostatic and Bladder Carcinoma and Benign Prostatism W. H. Haines and S. Michel—p. 1025
Testosterone Therapy in Male Hypogonadism J. F. McCahey—p. 1029
Importance of Wheeze in Diagnosis of Pulmonary Tuberculosis J. S. Packard—p. 1034
Study of Personality Factors in Group of Neuroses Seen in General Hospital B. L. Keyes and J. M. Plummerfelt—p. 1044
Present Status of Analgesia and Anesthesia from Obstetrician's Viewpoint T. L. Montgomery—p. 1048
Effects of Analgesia and Anesthesia on Prematures R. M. Tyson—p. 1051
Pathologic Lesions of Asphyxia Neonatorum E. F. Burt—p. 1053
*Inadequate and Ill Advised Surgery in Treatment of Carcinoma of Cervix L. C. Scheffey and G. A. Hahn—p. 1056
*Carcinoma of Cervix Study of 233 Cases Including 103 Five Year Cases with Survival of 33.9 Per Cent J. R. Johnston—p. 1062

Inadequate Surgery in Carcinoma of Cervix—According to Scheffey and Hahn, surgical measures of an ill advised or inadequate nature are being employed too frequently in carcinoma of the uterine cervix. They criticize operative management of this sort and emphasize the contraindications and technical limitations. Radical surgery for carcinoma of the cervix is a recognized method of treatment only on the condition that such a patient has been carefully selected. The lesion must be a relatively early one (groups I and II, Schmitz and League of Nations), the patient should be a reasonably good surgical risk and a radical operation must be performed by an operator thoroughly experienced in its exacting technique. The authors review results observed on 18 patients subjected to operation in whom recurrence was relatively prompt. Two groups consisting of 9 patients each were seen at the Jefferson and Oncologic hospitals of Philadelphia respectively. It is evident from the histories that in each instance either an inadequate operation was performed or proper indications for such an operation were lacking. The short survival of the patients subjected to vaginal hysterectomy is especially appalling when one considers that they were young women with supposedly operable lesions. The surgical procedure was probably not of the type of which Lynch, Bonney and others of similar experience are capable. If the decision to operate is made, it must be a selective operation, not only carried out by one qualified to perform a truly radical operation but based on the premise that the lesion is undoubtedly early, that the patient is an excellent risk and that intracavitary irradiation with radium has been a preliminary procedure. The authors feel that carcinoma of the uterine cervix is best treated with radiation therapy alone. There may be certain patients, carefully selected, who might possibly have a better chance for longer survival when treated surgically by one experienced in the rigorous technique of the radical operation, preceded by irradiation, but in general this is not so. Hence it would be wiser to avoid surgery in the treatment of cervical carcinoma, for a simple type of vaginal hysterectomy or abdominal panhysterectomy is at best only a hazardous and delaying measure in such instances.

Carcinoma of Cervix—According to Johnston cancer of the cervix causes about 15,000 deaths each year in the United States, more deaths than any other gynecologic disease. The author reviews 233 cases of cervical cancer that were registered at the Tumor Clinic of the West Penn Hospital during the last ten years. Twenty-nine per cent occurred in women under 40 years of age. Patients present themselves too late for treat

ment, as more than 50 per cent had symptoms for six months or longer. The diagnosis of cancer of the cervix is made by careful inspection and palpation of the cervix and by biopsy. At times, when no lesion is visible, a cancer can be detected by palpation, the hypertrophied indurated cervix indicating a carcinoma which can be proved by curetting the cervical canal. Biopsies should be made on all suspected lesions. Up to 1937 most of the cases were treated with radium followed by x-rays. Of late x-rays have been followed by radium. The x-ray dosage varies with the tolerance of the patient, usually from 1,600 to 2,200 roentgens to each of four ports over a period of three weeks. The radium is given in doses of 3,600 to 4,800 mg. hours. Some have had interstitial radiation in the form of four or five 10 mg. needles inserted in the parametrium. Treatment is not repeated unless there is a recurrence as proved by biopsy. The possibility of fistulas and rectal ulcers due to radiation reaction should be remembered and precautions taken to avoid them. The results in 103 five year cases show a survival rate of 33.9 per cent.

Physiological Reviews, Baltimore

23 185 304 (July) 1943

- Role of Lipids in Atherosclerosis E. F. Hirsch and S. Weinhouse.—p 185
- Nature of Forces Between Antigen and Antibody and of Precipitation Reaction L. Pauling, D. H. Campbell and D. Pressman.—p 203
- Physiologic Study of Vertical Stance of Man F. A. Hellebrandt and Elizabeth Brogdon Franzen.—p 220
- Noncaloric Functions of Dietary Fats G. O. Burr and R. H. Barnes.—p 256
- Quantitative and Qualitative Variations in Normal Leukocytes C. C. Sturgis and F. H. Bethell.—p 279

Public Health Reports, Washington, D. C.

58 969 1000 (June 25) 1943

- Studies on Duration of Disabling Sickness IV Duration of Disability from Nonrespiratory Nondigestive Diseases Among Male Employees with Particular Reference to Older Worker W. M. Gafaer and R. Sitgreaves.—p 969
- Health Officer's Place in Management of Mental Illness S. W. Hamilton.—p 979
- American Q Fever: Experimental Transmission by Argasid Ticks Ornithodoros Moubata and O. Hermis G. E. Davis.—p 984

Radiology, Syracuse, N. Y.

41 1-106 (July) 1943

- Correlation of Disability with Roentgen Findings Head Injuries L. H. Osmond.—p 1
- Correlation of Disability with Roentgen and Clinical Findings in Silicosis Part I P. Bovard.—p 11
- Id. Part II J. W. G. Hannon.—p 13
- Evaluation of Disability in Low Back Injuries F. L. Schumacher.—p 18
- Correlation of Disability with Roentgen Findings The Extremities. E. C. Baker.—p 23
- Posteromedial Pleural Line L. H. Garland.—p 29
- Radiographic Posteromedial Border of Lung or Linear Thoracic Parasplenic Shadow J. F. Brailsford.—p 34
- Value of Roentgen Therapy in Carcinomatous Metastases to Bone E. C. Koenig and G. J. Culver.—p 38
- Chondro-Osteodystrophy Morquio's Disease Case Observed During Pregnancy P. E. Russo.—p 42
- Carcinoma of Cervix Complicated by Complete Procidentia Radiation Therapy R. A. Harvey and R. N. Ritchie.—p 48
- Pedunculated Tumors of Stomach Prolapsing Through the Pylorus T. B. Weinberg and L. Raider.—p 52
- Effect of Roentgen Irradiation on Hormone Content and Secretion of Adrenal Medulla W. Raab and A. B. Soule Jr.—p 56
- Preliminary Notes on Effect of Roentgen Rays on Sulfonamides in Vitro I. C. C. Tchaperoff.—p 61

Rhode Island Medical Journal, Providence

26 79 92 (June) 1943

- Sex Hygiene in the Navy E. C. Smith.—p 80
- Presentation of Portrait of Charles F. Gormly M.D. to Rhode Island Medical Society R. Hammond.—p 82
- Report of State Chairman for Procurement and Assignment of Physicians to Medical Profession of Rhode Island H. DeWolf.—p 86.

26 93-106 (July) 1943

- Recognition and Management of Rheumatic Fever in Children. A. T. Martin.—p 93
- Extraperitoneal Cecostomy A. V. Migliaccio.—p 96
- Leukopenia in Infections P. C. Cook.—p 100

Surgery, Gynecology and Obstetrics, Chicago

77 1-112 (July) 1943

- *Perineal Prostatectomy versus Transurethral Resection for Hypertrophy and Cancer of Prostate H. H. Young.—p 1
- Metabolic Studies in Patients with Cancer of Gastrointestinal Tract XI Postoperative Hypoproteinemia and Relationship of Serum Protein Fall to Urinary Nitrogen Excretion. I. M. Ariel, J. C. Abels, G. T. Pack and C. P. Rhoads.—p 16
- Treatment of Gastric Ulcer E. S. Judd and J. T. Priestley.—p 21
- Rupture of Uterus Analysis of 30 Maternal Deaths C. A. Gordon and A. H. Rosenthal.—p 26
- Heparin Tolerance Test of Clotting Mechanism G. de Takats.—p 31
- Y Shaped Osteotomy for Correction of Open Bite in Adults. K. H. Thoma.—p 40
- Osteochondroma of Coronoid Process of Mandible R. T. Shackelford and W. H. Brown.—p 51
- Mammary Cancer in Youth T. de Cholnoky.—p 55
- Evolution of Circulation in Developing Femoral Head and Neck Anatomic Study W. E. Wolcott.—p 61
- Chemical Considerations Governing Local Chemotherapy of Wound Infections I. C. Schmelkes.—p 69
- Maximal Volume of Human Spleen P. P. T. Wu.—p 74
- Herniation of Nucleus Pulposus as a Complication of Preexisting Low Back Instability E. M. Deery.—p 79
- Posterior Horn Lesions in Meniscal Injury D. B. Slocum and D. E. Moore.—p 87
- Ten Years Experience with Ribbon Gut in Urologic Surgery O. S. Lowsley.—p 91
- Pattern of Uterine Motility Throughout Labor with Special Reference to Inertia Study of 105 Patients with Lorand Tocograph D. P. Murphy.—p 101

Perineal Prostatectomy versus Transurethral Resection—Young analyzed the histories of all patients (now totaling 200) who have come to the Brady Urological Institute complaining of imperfect results following transurethral resection elsewhere. He concludes that in patients with considerably enlarged prostates complete enucleation of the hypertrophied lobes through the perineum gives better results and is no more dangerous than transurethral resection. Prostatitis and painful urination are certainly less common after perineal prostatectomy than after transurethral resection. Another great advantage of the perineal procedure is the opportunity which it affords to make a diagnosis and effect a cure of carcinoma of the prostate. Many conditions, particularly bars, contractures and small hypertrophies can be dealt with efficiently by transurethral resection, but perineal prostatectomy is distinctly superior for the larger hypertrophies, calculi in the prostate and chronic prostatitis. Prostatism is so complex in its symptoms and so varied in pathologic aspect that it can be handled satisfactorily only by careful selection of the operative procedure best suited to obtain a radical cure. The exclusive use of transurethral resection for all types of prostatic obstruction, even the large and the cancerous, is indefensible.

Texas State Journal of Medicine, Fort Worth

39 53-168 (June) 1943

- Scientific Medicine is Fundamental J. L. Taylor.—p 59

39 169-220 (July) 1943

- Methods of Reducing Mortality and Morbidity in Appendicitis Q. B. Lee.—p 175
- Use of Acid Jelly Postoperatively After Vaginal and Cervical Operations and in Nonspecific Infections of Vagina. K. J. Karnaky.—p 178
- Staphylococcus Infection with Case Reports and Treatment. R. H. Harrison.—p 185
- Renal Hypertension Value of Translumbar Arteriography in Its Diagnosis Preliminary Report A. K. Doss.—p 188
- Diagnosis of Intrathoracic Tumors R. G. McCorkle and C. J. Koerth.—p 194
- New Era in Medicine E. W. Bertner.—p 197
- Diverticulum of Esophagus Duodenum and Colon Report of Case. M. H. Metz.—p 200
- Complications and Sequelae of Cataract Operations E. L. Goar and J. F. Schultz.—p 201

Virginia Medical Monthly, Richmond

70 331-382 (July) 1943

- Three Gallbladders W. L. Peple.—p 331
- Adams Stokes Syndrome as Complication of Myocardial Infarction Report of 3 Cases Demonstrating Two Different Underlying Mechanisms. J. R. Beckwith.—p 336
- Further Observations on Treatment of Eclampsia. M. P. Rucker.—p 343
- Virus Pneumonia by Contrast with Other Types J. H. Smith.—p 353
- Alcohol Abuse A Public Problem. H. Emerson.—p 358
- Therapy of Meningitis J. B. S. Perrow.—p 363
- Pelvic Appendicitis L. Smith.—p 366
- Planigraphy X-Ray Technic. N. Mercer.—p 369

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

3 145-192 (May) 1943

Evaluation of Roentgenologic Findings in Arthritis J. D. Camp —p. 145

Rheumatic Fever and Nutrition J. F. Rinehart —p. 154

*Visceral Lesions Associated with Rheumatoid Arthritis D. L. Fingerman and F. C. Andrus —p. 168

Blood Cultures in Rheumatoid Arthritis (Historical and Personal Observations) T. N. Fraser —p. 181

Visceral Lesions Associated with Rheumatoid Arthritis—Fingerman and Andrus examined the records of 192 cases with a diagnosis of arthritis. There were 61 cases of rheumatoid arthritis. The authors apply the term rheumatoid to the severe deforming type of chronic infectious arthritis. The criteria used in selecting these cases of rheumatoid arthritis were as follows: The disease must have been chronic, being present a minimum of several months. It must involve two or more joints. It must have caused deformities of the joints and their adjacent structures. It must be of a nonsuppurative type. The authors examined the clinical records and available pathologic material from 61 patients who had died with chronic rheumatoid arthritis. Lesions indistinguishable from those found in the rheumatic heart were encountered in 19 cases (31 per cent). Six of the patients with rheumatic heart lesions had congestive heart failure as evidenced by chronic passive congestion of the liver. Only 3 persons in the entire group had "Felty's syndrome," or chronic arthritis associated with splenomegaly and leukopenia. There were 6 other patients with splenomegaly along with the arthritis deformans who did not have leukopenia. Amyloidosis involving one or several organs was found in 13 patients (21 per cent). Glomerulitis was found in 8, of which 6 were in early subclinical stages, and the remaining 2 had clinical evidences of glomerulitis.

British J. Children's Diseases, Dorking, England

40 31-62 (April-June) 1943

Teeth of School Children from Point of View of School Doctor C. Rolleston —p. 31

Cause of Death in Newborn Babies S. Engel and G. H. Newns —p. 36

British Medical Journal, London

2 31-62 (July 10) 1943

Circulation in Arterial Hypertension G. W. Pickering —p. 31

*Chemotherapy of Intestinal Infections Treated with Sulfonamide Compounds A. C. Clay —p. 35

Technic of Intravenous Drip Transfusion in Infants D. MacCarthy —p. 36

Trigeminal Neuralgia at an Exceptionally Early Age Cured by Gasserian Alcohol Injection W. Harris —p. 39

Availability of Calcium of Milk Katharine H. Coward, Elsie W. Kassner and Letitia W. Waller —p. 39

Sulfonamide Compounds in Intestinal Infections—Clay reviews 273 cases of bacillary dysentery treated at the City Hospital of Aberdeen during 1941 and 1942, 4 cases of gastroenteritis in infants and 8 cases of paratyphoid B. Of the patients with bacillary dysentery 140 received no drug, 83 were treated with sulfaguanidine, and 50 received sulfanilamide. Adults not receiving chemotherapy were given 2 drachms (8 Gm) of sodium sulfate night and morning and children 1 drachm (4 Gm) night and morning. Those receiving sulfaguanidine were given a five day course based on body weight, the initial loading dose during the first twenty-four hours being 0.5 Gm per kilogram of body weight, followed by a maintenance dose of 0.1 Gm per kilogram for the next four days. Those receiving sulfanilamide were given a dosage amounting to half the quantity of sulfaguanidine. The tablets were powdered and administered in milk every four hours for the first twenty-four hours and three times daily for about the next four days. Fluids were given intravenously in the form of 5 per cent dextrose in isotonic solution of sodium chloride when necessary, and particular stress was laid on fluid intake by mouth, 8 to 10 pints for adults and proportionately less for children. The stay in the hospital and the number of days during which the stools remained positive were reduced by half for patients receiving

sulfaguanidine as compared with those not receiving chemotherapy except in the case of Sonne convalescent carriers, whose stay in the hospital and number of days bacteriologically positive were slightly increased. Of the patients receiving sulfanilamide both the stay in the hospital and the length of time during which stools remained positive were increased, but this may be accounted for by the small dosage of drug and by the small number of patients treated. Neither sulfaguanidine nor sulfanilamide produced toxic symptoms or disagreeable effects. Four patients with gastroenteritis and 8 with paratyphoid B were treated with sulfaguanidine without improvement.

Deutsche medizinische Wochenschrift, Leipzig

68 313-340 (March 27) 1942 Partial Index

Surgical Wound Infection and How to Combat It H. Hellner —p. 313

*Problems in Employment of Desoxycorticosterone and Similar Substances in True Adrenocortical Insufficiency F. Heni —p. 318

Tuberculosis of Infants E. Puschel —p. 322

Gastritis, Ulcer, Carcinomas J. Meinertz —p. 326

Desoxycorticosterone in True Adrenocortical Insufficiency—Heni investigated the cause of edema and hypertension in the course of treatment with desoxycorticosterone acetate. He describes observations on healthy subjects and on patients which convinced him that the chief action of desoxycorticosterone acetate is that on the sodium chloride and water economies. Sodium and water are retained in the blood and extracellular spaces and cause increase in blood pressure. If large doses of desoxycorticosterone acetate are used, edema may result. Edema, hypertension and acute shock are not caused by excessive intake of sodium chloride but by desoxycorticosterone acetate. The effect of this substance on the potassium exchange is not as noticeable as that on the sodium. The carbohydrate metabolism is not completely normalized and the fatigability of the patients is not counteracted when signs of excessive dosage appear already in the sodium chloride exchange. Desoxycorticosterone acetate in doses as large as possible was given to 4 patients with Addison's disease. It was impossible to obtain complete restoration in spite of prolonged medication. The patients still felt weak. Complete recovery was obtained only in those whose disease was moderately severe. The authors conclude that although desoxycorticosterone acetate is the best available remedy for Addison's disease their observations indicate that desoxycorticosterone acetate or desoxycorticosterone either are not identical with the adrenocortical hormone or do not represent the only hormone of this organ. Substances chemically related to desoxycorticosterone are capable of exerting favorable effects on the metabolic disturbances of Addison's disease. In severe forms of the disease only progesterone is effective, in mild forms testosterone and low doses of estrone (theelin) effect improvement. These substances do not act by way of the sodium chloride and water exchange, but they improve the glycogen reserve of the organism, particularly that of the musculature. Progesterone might be used in the treatment of severe Addison's disease if moderate doses of desoxycorticosterone cause disturbances in the sodium chloride and water economies.

68 341-364 (April 3) 1942 Partial Index

Prognosis of Biliary Disorders F. Munk —p. 341

*Study of New Hereditary Agglutinable Factor in Human Erythrocytes P. Dahr —p. 345

Specific Biologic Treatment of Staphylococcal Diseases H. Gross —p. 347

Encephalitis like Manifestations and Disturbances of Kidney Function in Subacute Lead Poisoning E. Kirchner —p. 351

New Hereditary Agglutinable Factor in Human Erythrocytes—A new hereditary agglutinable factor could be detected in human erythrocytes by guinea pig immune serum produced with blood of rhesus monkeys. In 923 out of 1,129 blood tests, or in 81.5 per cent, the agglutinin which had been designated as Rh was found, whereas in 206 blood tests, or 18.5 per cent, it was not found. The distribution among the ABO blood groups, the A subgroups and the MNP types seemed to be equal. Studies of 46 pairs of twins suggest that the agglutinin Rh is hereditary. Results of study in a small number of 17 families are compatible with the assumption that agglutinin Rh is a simple dominant inherited characteristic.

Book Notices

Convulsive Seizures How to Deal with Them a Manual for Patients Their Families and Friends By Tracy J. Putnam M.D. Professor of Neurology and Neurosurgery College of Physicians and Surgeons Columbia University New York Cloth Price \$2 Pp 168 with 12 illustrations Philadelphia Montreal & London J B Lippincott Company 1943

There is a real need for a book to which the victims of convulsions and their families can turn for reliable information. In a large measure this book supplies that need. The task of any book which would instruct patients is a difficult one. Such a book must on the one hand be accurate and sufficiently complete to supply the patient with the required information without at the same time frightening him with rare and unlikely complications of his disorder and without providing just enough information to encourage self medication. A book which would treat of "epilepsy" has one other requirement which it must meet—it must help to brush away the superstitions, fears and inaccurate concepts which have grown up about the convulsive states of unknown origin. If the present book has any one general failing, it is that it is not sufficiently forceful on the latter point. It says but it does not sufficiently stress the facts that in the majority of cases the convulsive seizures can be completely abolished if adequate treatment is begun early and persevered in and that such patients need have no fear of insanity or mental deterioration and can and should lead perfectly normal healthy lives with the same chances to achieve happiness and success in their chosen occupation as other people. The author tends far too much to view "epileptics" as a group, making no effort to separate the mentally retarded with convulsions and those with uncontrollable seizures from the larger and far more favorable group. It is these less fortunate individuals, in particular, that bring down the average of physical fitness noted on page 23.

The author has also been too much impressed with some rather poorly considered statistics on the inheritance of convulsions or a convulsive tendency (pp 22 and 119). In these statistics, as he noted himself, the rather uncommon instances of definitely hereditary epilepsy were not separated from the far more common sporadic cases. Likewise he has been overly impressed with the value of electroencephalography in selecting individuals with or without the probable potentiality of perhaps producing epileptic children (see p 151). Not all of those with experience with electroencephalography would agree that the technic has any such capabilities.

Chapter 8, on medical literature, and chapter 9, on the legal aspects of epilepsy, had best be omitted from this book. The latter chapter could well be enlarged for publication in some journal for lawyers or for presentation before legislators. It detracts from the value of this book.

The author is to be complimented for having avoided fads and all peculiar forms of treatment which have found favor in only a few hands. The reviewer's experience would lead him to feel that the restrictions on alcoholic beverages for these patients should be complete and not as lenient as those given here (p 92).

This book can be recommended to some patients and to more families. No doctor should recommend it without first reading it. It should be placed only in the hands of intelligent and fairly stable people. It is not a book for the overapprehensive worrisome, easily agitated person. Such people would find more than enough to exercise them here.

A Handbook for Emergency Commissioned Officers of the Indian Medical Service By Lieut Colonel J R Dogra M.D. I.N.S. Foreword by Major General J N Thomson D.S.O. M.C. Boards 1p 202 Bombay: Thacker & Co. Ltd. 1943

This handbook contains the essential information required to orient completely the emergency commissioned officer of the Indian Medical Service. In addition the book contains basic reference material which the officer will want to reread until he becomes thoroughly acquainted with it. Any army medical department officer would find this handbook distinctly helpful if he should be destined for service in India or with the Indian Army.

It will require four to five hours of careful reading to digest the 136 pages of subject matter. Appendix VII, appendix VIII and appendix IX should be studied carefully first. This procedure will eliminate too frequent reference to the appendix and permit continuous reading. By the use of many abbreviations many facts have been transmitted in comparatively few pages. It is hard to believe that this small handbook can and does include all of the following essentials: organization of the army in India, the medical officer and his relationship to the army, military life, military dress, military courtesy, military discipline, military law, organization, functions and operation of the medical units, duties of medical officers in their various capacities in field and garrison service, field sanitation and preventive medicine, collection and evacuation of casualties, preparation of orders, messages, estimates of the medical situation and medical forms, and, in addition, six appendices, which include translation of the Geneva Convention, uniform and equipment for emergency commissioned officers, lecture demonstrations, medical standing operative procedures, water sterilization, army forms required by the medical service, medicomilitary definitions and abbreviations.

The medical department officer of the United States Army who reads this book should review our own medical service procedure and installations before he reads it. More enjoyment will be gained thereby in the comparison. For example, he should be able to associate quickly such medical installations as the regimental aid post, advanced dressing station, main dressing station and casualty clearing station with respective stations of our service. He will then be able to trace the casualty through the echelons of evacuation as operated by the Indian Medical Service.

This book reveals a vast amount of experience on the part of the author, who has presented ideal and essential information in a condensed form. It is highly recommended to every Medical Department officer who has interest in medical service of another army or who might serve with the Indian Medical Service.

The Determination of Blood Groups Medical Research Council War Memorandum No 9 Paper Price 10 cents 4d Pp 19 New York: British Information Services London: His Majesty's Stationery Office 1943

The experience gained from the large scale blood group determinations in Britain during the last three years has suggested "that certain procedures, rigidly followed will reduce errors in grouping to a minimum." To that end the memorandum was compiled by members of the Blood Transfusion Research Committee appointed by the Medical Research Council. Tests for ABO blood groups, subgroups of A, crossmatching tests, preparation and storage of test serums, sources of error and the Rh factor are presented. The completeness of information offered in the sixteen pages of text, the excellent selection of the recommended methods and the emphasis on sources of error combine to make this pamphlet a most valuable contribution to be placed in the hands of clinical pathologists and of technicians who do pretransfusion tests. It can be recommended as the best of its size.

Essentials of Proctology By Harry E. Bacon B.S. M.D. F.A.C.S. Professor and Head of the Department of Proctology Temple University Medical School and Hospital Philadelphia. Introduction by Curtice Rosser B.A. M.D. F.A.C.S. Professor of Proctology Baylor University Dallas. Cloth Price \$3.50 Pp 345 with 168 illustrations Philadelphia Montreal & London J B Lippincott Company 1943

The author has taken from his own earlier work portions of those chapters which deal with practical phases of proctology and problems of interest to the physician as he goes about his daily tasks. It is a convenient little volume which should prove valuable to those who do not possess the author's more complete volume. In the foreword Dr Curtice Rosser wrote: "In 'The Essentials of Proctology' which Dr Bacon herewith offers to the student, the general practitioner, the surgeon and the specialist in colorectal diseases is a concise, fluent and detailed exposition of the author's own experience and current practice. This is an accurate appraisal of the character of the book."

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

UNCONSCIOUSNESS AT HIGH ALTITUDE AND OXYGEN SUPPLY

To the Editor—In *The Journal*, July 24, 1943, there is an article on a parachute jump made by Lieut. Col. William Lovelace from 40,000 feet. The statement was made in the third paragraph that unconsciousness occurred within fifteen seconds without oxygen at 40,000 feet. Since many people can hold their breath for a much longer period of time and even swim under water for longer than fifteen seconds I was wondering whether or not this was a typographic error or whether there were other factors.

Raul Pietri, M.D., Asbury Park, N. J.

ANSWER—Unconsciousness occurs within fifteen seconds without oxygen at 40,000 feet if the person continues breathing. Once a man is disconnected from his oxygen supply his first expiration empties his lungs and inspiration thereafter takes in air which is so deficient in oxygen that unconsciousness will ensue almost immediately. The actual saturation of blood at 40,000 feet, breathing pure oxygen, is slightly less than normal, consequently the decline in saturation or onset of unconsciousness occurs with extreme suddenness. This is inherent in the nature of the saturation curve of hemoglobin. If a man at 40,000 feet takes a deep breath and holds it, he will remain in much better condition than if he continues breathing after disconnecting his oxygen supply. It might be further stated that the actual oxygen consumption at 40,000 feet is approximately the same as at ground level or at 300 cc standard temperature and pressure dry per minute. The actual volume of oxygen in the lungs is approximately 1,000 cc standard temperature and pressure dry per minute when breathing pure oxygen at 40,000 feet. From this it readily can be seen that the interval of reserve is extremely small even when one is holding the breath.

APLASTIC ANEMIA AFTER EXPOSURE TO FLOOR WAX AND FLY SPRAY

To the Editor—Can you inform me of the ingredients of Veeco Self-Polishing Wax, manufactured by the Americap Products Company of Cincinnati and of Wax Rite Floor Wax, manufactured by the Vestal Chemical Company of St. Louis? A 3 year old child was found to be suffering from a profound anemia and leukopenia. Bone marrow aspiration revealed an aplastic type of marrow. A history of exposure to these waxes was obtained and it was also learned that the child had been exposed to fly spray used in a dairy barn. Are there any ingredients used in the more common fly sprays which are known to be toxic to the hemopoietic system?

John W. O'Neill, M.D., Eau Claire, Wis.

ANSWER—The two floor waxes mentioned by name are believed to be of the aqueous soap emulsion type and therefore contain only water as the solvent and none of the organic solvents widely common in some other varieties of floor waxes. Apart from certain hydrocarbon solvents later specified, floor wax ingredients do not cause the clinical manifestations mentioned in the query, although some may induce dermatitis. The organic solvents most likely to appear in floor waxes are toluene, trichloroethylene, naphtha, alcohols and petroleum ether. If benzene or carbon tetrachloride should be utilized potentially, highly dangerous situations might arise. Benzene is known to induce the symptoms described. If any of the floor waxes now questioned has been retained, analyses should be made for benzene although in both instances there is assurance from the manufacturer that no solvent other than water enters the formula. A typical formula for a floor wax of the non-soap emulsion type is East India gum 23 pounds, beeswax 6 pounds, Carnauba wax 20 pounds, Montan wax 8 pounds, naphtha 89 pounds, turpentine 10 pounds, pine oil 3 pounds. Pyrethrum is scarce in this country just now, earlier having chiefly been obtained from Japan. Some insecticides formerly containing pyrethrum as the main insecticidal agent no longer contain it. If, in fact, a pyrethrum spray was used, and this was a well known brand, some petroleum derivative such as naphtha was probably the extracting agent. However, almost any agent might have been employed under present conditions, including dichloroethylene, carbon tetrachloride, trichloroethylene and conceivably benzene. Since exposure probably was limited to a few short periods, this etiologic possibility seems remote.

HYPERSENSITIVITY TO SULFONAMIDES

To the Editor—Has any work been done to determine how long sensitivity to sulfonamides is maintained and the amount necessary to cause exacerbation? Is it possible to desensitize an individual who is sensitive?

M.D., Massachusetts

ANSWER—It is not known from any extensive study how long a patient remains sensitive to sulfonamides. However, isolated cases are on record in which sensitivity was shown to persist for as long as three years. The amount of sulfonamide necessary to cause an exacerbation is usually small, so that a single dose of 0.6 Gm may cause symptoms in a sensitive person. There are no good methods available for desensitizing patients. Sensitization to the sulfonamides is usually but not always specific. That is to say, there is usually no cross sensitization. If a patient is sensitive to one sulfonamide compound, another compound can usually be given with safety.

VITAMIN B COMPLEX AND TINNITUS

To the Editor—What do you feel would be the proper dose of vitamin B₁ for a tinnitus, which ear, nose and throat specialists say has no apparent cause other than possible nerve involvement? There is no deafness.

M.D., New York

ANSWER—There is no satisfactory evidence that vitamin B₁ (thiamine hydrochloride) is of any help in cases of tinnitus or nerve deafness. Since vitamin deficiencies are generally multiple, it would seem wise to give the whole vitamin B complex rather than just the B₁ fraction.

An article by Shambaugh and Jennes in the *Archives of Otolaryngology* (35:513 [April] 1942) summarizes the literature on vitamin B in deafness and gives the results of use of large doses of B₁ in cases of tinnitus in deafness, which were entirely negative.

BARBITURATES WITH SCOPOLAMINE IN OBSTETRICS

To the Editor—Can you give me information on the use of barbiturates combined with scopolamine for obstetric analgesia? I should like to know the dosage and how soon it could be repeated. Also is it free from the objections that "twilight sleep" has, that is, I suppose it was the morphine part of twilight sleep that was dangerous to the baby rather than scopolamine, wasn't it? Will you please set me straight on this.

George A. Bakke, M.D., Oakland, Calif.

ANSWER—The barbiturates can be used in conjunction with scopolamine to provide obstetric analgesia. Their effectiveness depends on the drug selected and the amount administered. Unlike morphine, which is primarily an analgesic drug, the barbiturates induce amnesia rather than analgesia. Large amounts are usually necessary to provide desirable effects during labor. The barbiturates, like the opiates, produce narcosis in the newborn. Effective doses will result in asphyxia, which is just as severe as that induced by morphine, or even more severe. An initial dose of such barbiturates as secenal or soluble pentobarbital in combination with scopolamine may be 3 to 6 grains (0.2 to 0.4 Gm). The barbiturate may have to be repeated in four to six hours to maintain the desired effect. Larger doses have been advocated, but these are not desirable in most instances. Patients in labor under the effect of barbiturates must be constantly attended, for their semicomatose, often delirious, state may lead to unpleasant and serious complications.

MALARIA IN ALABAMA

To the Editor—The answer to the query of "M.D., Florida" about malaria in southern Alabama, and particularly a 'gulf town in Alabama' which appeared on page 1152 of *The Journal*, Aug. 14, 1943, would not lead an uninformed person to a proper conclusion. The reply errs in stating that "chances of contracting the disease by unacclimated persons would be great." To take a considerable and representative population such as that of Mobile County as a basis of measurement, the vast majority of persons never in their lifetimes have either acute or chronic malaria. If the infection rate is a hundred times as high as the death rate, which for the county varies between 0 and 9 per hundred thousand, the morbidity per year is only between 0 and 0.9 per cent. Those would not be all new cases of course, but a total including reinfections and infections carried over. The significance of that last point is great because the disease is focalized more than the statement would lead one to believe. Where residence is even moderately dense, *Anopheles quadrimaculatus* breeding has been mainly controlled if it ever occurred or, conversely, where breeding of this mosquito could not be controlled, residence has not become or remained dense. As an example in the entire Mobile metropolitan or 'defense' area last year so few *A. quadrimaculatus* mosquitoes could be found either in breeding areas or in adult catching stations that there was a repeated threat that all financial aid for survey and control activities would be withdrawn.

It is true that military forces and in years past but probably not recently, industries have selected sites unfortunately without consideration of conditions which might affect malaria transmission. These, as well as individuals and families, could have settled in the same general areas and perhaps on sites only a mile or two away with a high degree of safety.

O. L. Chason, M.D., Mobile, Ala.

Health Officer, Board of Health

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GASTROINTESTINAL DISTURBANCES IN THE COMBAT AREA

I PRELIMINARY OBSERVATIONS ON PEPTIC ULCER

CAPTAIN ALEXANDER RUSH
MEDICAL CORPS, ARMY OF THE UNITED STATES

The basis for this report is the fruit of a year's experience in a large hospital in the South Pacific close to the zone of combat. The findings reported are the result of the study of 200 consecutive patients admitted to the medical service because of gastrointestinal disorders. This figure represents 6 per cent of the total number of medical admissions during the year. This percentage appears disproportionately low when compared with the experience of other institutions.¹ However, it does not include patients admitted because of either dysentery or jaundice.

In civilian practice it is seldom imperative to make an immediate diagnosis in dealing with a patient experiencing the symptoms of peptic ulcer. Especially when the diagnosis is not clear, supportive dietary measures may be sufficient to keep the patient at his job. In military practice the converse is true. Since a satisfactory dietary regimen is not possible while the patient is on active field duty and since the only other alternative—extended hospitalization—impairs the military efficiency of the soldier's unit, an early diagnosis is demanded. The soldier must be promptly and definitely declared either fit or unfit for active duty. Only on the basis of such information can unit commanders keep their organizations at peak strength and efficiency. Thus peptic ulcer in the field presents new ramifications to an old problem.

INCIDENCE OF PEPTIC ULCER

Peptic ulcer was diagnosed in slightly over 10 per cent of all medical patients admitted during a twelve month period beginning in March 1942. This figure represents approximately 19 per cent of patients admitted to the wards for treatment of disorders of the upper gastrointestinal tract. Of the figures on hand at this writing, only those of the New Zealand forces in the Middle East compare favorably with these. They report the presence of peptic ulcer in 18 per cent of 100 patients admitted because of dyspepsia.² Allison and Thomas³ reviewed 100 cases of dyspepsia among sailors and marines and gave 45 per cent as the figure for the incidence of peptic ulcer. Likewise Chamberlin and Berk described peptic ulcer as occurring in 31 per

cent and 41 per cent of those admitted to the gastrointestinal services of the Lawson and Tilton general hospitals respectively.¹ The explanation for these differences is not clear. However, the disparity may be related to the locality and the type of hospital from which the latter reports emanate. Both the New Zealanders and ourselves were drawing patients directly from the combat troops in the field. On the other hand, the large general hospitals frequently obtain the majority of their patients by transfer from other smaller installations. The latter have screened out the run of the mill medical patients and transferred the soldiers with serious incapacitating illnesses such as peptic ulcer, to the general hospitals. Under these circumstances it can be seen that the incidence of certain diseases would appear higher in the clinical material of army general hospitals than in that of field hospitals.

CLINICAL HISTORY

Approximately half of our patients with ulcer gave clearcut histories of previous attacks. This observation lends little support to the contention that army rations or living conditions in the field bear any direct relation to the production of peptic ulcer. A typical and classic history was obtained from 80 per cent of the patients with ulcer. There is no question that a careful chronological compilation of symptoms is of inestimable value in reaching a satisfactory diagnosis. However, soldiers soon learn that a certain set of complaints is commonly associated with peptic ulcer and that this disease is one for which they will be sent home. Consequently a classic history in the absence of corroborative evidence must be looked on with suspicion. On the other hand, the dictum that "the stomach is the greatest liar in the body" has been found to be equally true. Disconcertingly often a soldier who gave a history typical of irritable or spastic colon was shown by x-ray examination to have undeniable evidence of peptic ulcer. The gastrointestinal disturbance of 10 per cent of the patients with peptic ulcer was thus misdiagnosed as functional. In regard to another 10 per cent a similar misdiagnosis was made but with the added note "ulcer to be ruled out." This makes a total of 20 per cent wrong diagnoses based solely on the history. The two extremes described emphasize the importance of viewing the patient as a whole and of drawing on every available means of diagnosis. Reliance on a single symptom, sign or examination is likely to lead to serious errors.

EXAMINATIONS

Physical Examination—Sixty per cent of the patients with ulcer had tenderness in the epigastrium. In one fourth of these the tenderness was unmistakable. No relation, however, could be established between the type and locality of the lesion and the character of the pain and tenderness.

X-Ray Examination—Sixty-seven per cent of the diagnoses of peptic ulcer were supported by x-ray evi-

¹ Chamberlin, Donald T. Peptic Ulcer and Irritable Colon in the Army. *Am. J. Digest. Dis.* 245:248 (Aug.) 1942, cited by Palmer W. J. The Stomach in Military Medicine. *J. A. M. A.* 119:1155-1159 (Aug. 8) 1942.

² Iley, C. Graham. Major. *N. Z. M. C.* Personal communication to the author.

³ Allison, P. S. and Thomas, A. Robinson. Peptic Ulcer in the Royal Navy. Symptoms and Pathology. *Lancet* 1:565 (May 3) 1941, cited in Dick, C. F. and others. The 1942 Year Book of General Medicine. Chicago: Year Book Publishers, Inc. 1942.

dence A crater was demonstrated in only 21 per cent of the patients with positive x-ray signs. This figure differs widely from those of some of the better known gastroenterologic services in large civilian hospitals, where direct x-ray evidence is said to be obtainable in approximately 95 per cent of the patients with ulcer.⁴ Two factors may be responsible for this difference. In the first place the technical difficulties in the field have been great and mucosal relief studies have been out of the question with the equipment at hand. In the second place it is possible that an unusual state of affairs exists among military personnel on active duty, which may influence the roentgenologic demonstration of peptic ulcer.

This is illustrated by the following comparison. In civilian practice there is commonly a delay between the onset of the symptoms of ulcer and the x-ray examination. The first symptoms are seldom incapacitating, and the patient finds sufficient relief by eating between meals and by consuming quantities of alkali. Finally, after a period of time or after several bouts of distress increasing in severity, these simple measures are no longer effective. It is only then, some time after the first appearance of symptoms, that the patient comes before the physician and eventually the fluoroscopic screen. By this time the pathologic process may have had ample opportunity to proceed unhindered to the point where x-ray demonstration is relatively simple. In contrast, the soldier in most instances is required to perform hard physical work under conditions such that he is unable to obtain either food or medication between his regular meals. For this reason he probably seeks medical relief sooner than the majority of civilians. At this early date the chances of demonstrating a small lesion by the techniques available in the field are probably extremely poor. Thus it is felt that too much reliance cannot be placed on a negative x-ray report in the field.

Gastric Analysis—A fractional gastric analysis using alcohol, histamine or intravenously injected insulin as the stimulus was performed on every patient admitted to the gastrointestinal section. In no instance did a fractional gastric analysis contribute directly to a positive diagnosis of peptic ulcer. It is true, however, that a peptic ulcer was never found to occur in a patient who had no free hydrochloric acid in his gastric secretion. Furthermore, fasting gastric contents that were repeatedly high in free acid and of a volume greater than 150 cc invariably were associated with other definite evidence of peptic ulcer.

For the foregoing reason and because of the tremendous amount of time involved, the routine use of fractional gastric analysis was discarded in favor of examining the fasting contents alone. Should no free acid be demonstrated in the gastric juice on adding a few drops of Topfer's reagent, a suitable stimulus was given such as subcutaneously injected histamine or intravenously injected insulin. At one hour and at one hour and a half after the injection the gastric contents were again aspirated and titrated for free acid. The stated times for aspiration were selected because experience showed that they would bracket the peak secretion in practically all cases.

Examination of Stools—Three consecutive examinations of the stools for occult blood after a three day period during which the patient was fed a meat free diet represented a routine practice. Every patient

whose stools gave a positive benzidine reaction was given a proctoscopic examination to rule out a lesion of the lower sigmoid colon, rectum or anus as a source of blood. This procedure was especially indicated since a low grade chronic proctitis or cryptitis was an occasional sequel to the dysentery that affected many of the troops. A positive benzidine reaction for occult blood in the stools was of value in the diagnosis of peptic ulcer only when interpreted in the light of other findings and only when sources of blood other than peptic ulcer had been eliminated.

Acid Test—The patient strongly suspected on clinical grounds of having a peptic ulcer but with no lesion of the upper gastrointestinal tract demonstrable by x-ray examination presented a challenging problem. Fractional gastric analysis and examination of the stools for occult blood were usually of extremely doubtful value as aids to diagnosis in such cases. In our search for additional diagnostic procedure we turned to the acid test described by Palmer of Chicago.⁵ The results of this test in our hands gradually assumed increasing importance in differentiating between a functional gastrointestinal disturbance and true peptic ulceration. This test is based on observation that the instillation of 200 cc of hydrochloric acid in physiologic concentration induces in a patient with a fresh, sensitive peptic ulcer the typical epigastric distress that is so characteristic of an active lesion and that this distress is promptly relieved by aspiration of the acid solution followed by instillation of a solution of sodium bicarbonate. Perhaps the greatest advantage of this procedure in our experience was that while the patients might have learned from others the usual pain-food-ease symptom complex they had little opportunity to know just what liquids were being instilled or just what the characteristic response should be in the event that an ulcer was present. This test we performed by completely emptying the stomach with a Levine tube and then instilling 200 cc of 0.3 per cent hydrochloric acid. At the end of a fifteen minute period the stomach was again emptied and left in this state for fifteen minutes. At the end of the second fifteen minute interval 200 cc of 2 per cent solution of sodium bicarbonate was introduced and the patient was observed closely during a final fifteen minute period. The character, the locality and the severity of distress noted during each fifteen minute period were recorded. In the presence of a sensitive ulcer the response was usually striking and unmistakable. For one third of the patients in whom typical distress was induced there was positive x-ray evidence of ulcer. In a control series composed largely of patients suffering from symptoms attributable to functional gastrointestinal disturbances no such clearcut responses were encountered. Distress was sometimes observed in this control group but it was invariably vague and ill defined.

There is another possibility that should be mentioned. It is conceivable that in severe ulcerative gastritis typical epigastric pain might be elicited by the instillation of acid. The need for gastroscopic studies to determine this point is evident.

RESPONSE TO THERAPY

As an additional aid in the differentiation between pain due to an active ulcer and pain due to a functional disturbance, response to therapy was given considerable weight in totaling the balance of evidence for and

⁴ Palmer, W. L. *Peptic Ulcer*, in Cecil, Russell L. *A Textbook of Medicine*, ed 5, Philadelphia, W. B. Saunders Company, 1940.

⁵ Palmer, W. L. *The "Acid Test" in Gastric and Duodenal Ulcer*, J. A. M. A. 88: 1778-1780 (June 4) 1927.

against an organic lesion. The patient suspected of having a peptic ulcer was given hourly feedings of 120 cc of equal parts of evaporated milk and water with gradual addition over the course of the ensuing two weeks of soft bland foods. If this dietary management failed to control symptoms, resort was had to a continuous alkaline milk drip as recommended by Winkelstein for a period of not less than forty-eight hours. One liter of equal parts of evaporated milk and water to which had been added 5.0 Gm of sodium bicarbonate was given over a period of eight hours. This was given at the rate of about 30 drops per minute. The response to this therapy in all the patients with ulcer was both prompt and gratifying. At the end of forty-eight hours it was usually possible to substitute hourly milk feedings for the continuous drip and to keep the patients comfortable and free of symptoms except for a few with severe pain at night. In striking contrast, those patients with a functional gastrointestinal disturbance, and there were many, almost uniformly failed to express any clearcut or more than transient relief of their symptoms. Perhaps the explanation of this significant difference in response to therapy lies in the fact that the majority of patients with functional gastrointestinal distress gave other evidence of an underlying severe emotional disorder. Their symptoms may well have represented an unconscious neurotic reaction which served to prolong hospitalization and provide an escape from an unpleasant situation.

ARMY GENERAL CLASSIFICATION TEST

The relationship between the results of the army general classification tests and diseases of the digestive tract are discussed in greater detail elsewhere. In brief, these tests are designed to determine a man's ability to learn the duties of a soldier. On the basis of his score a soldier is placed in one of five broad classes called army grades. These grades give an indication as to his relative ability to learn as compared with the average soldier. When the percentage of patients with ulcer in each grade was compared with the theoretical standard, it was found that there was no significant deviation. This contrasts sharply with our findings in patients suffering from functional disturbances of the digestive tract.

DISPOSITION

The question of disposition of the patient who develops a peptic ulcer in the field soon became an important one. At first there was an inclination to give the patient a thorough course of dietary treatment and rest and then return him to duty. Experience proved the inadvisability of this practice. In one instance a soldier with a clearcut clinical picture but only minimal deformity of the duodenum on x-ray examination was returned to duty symptom free after a course of what would generally be considered adequate medical care. His duties were ordinarily light, he had access to abundant food and fresh milk and was living under garrison conditions. This man remained well and symptom free for nearly two months. At the end of this time there was a sudden increase in responsibility, long hours, irregular meals and heavy physical labor. He endured these changed conditions for about ten days, at the end of which time he was brought into the hospital with an acute perforation of an ulcer in the duodenum. He was operated on successfully and recovered. This is but one case. However, this experience emphasizes the importance of removing the patient having peptic ulcer from the field and returning him to the zone of the

interior where facilities are adequate for their care and rehabilitation. Therefore it has become the policy of the disposition board of this hospital to recommend the transfer to a general hospital in the zone of the interior every patient known to have or strongly suspected of having a peptic ulcer.

CONCLUSIONS

- 1 The ulcer problem in the combat area presents new difficulties peculiar to military personnel.
- 2 The clinical history while of definite value cannot be relied on solely in the diagnosis of peptic ulcer.
- 3 Positive x-ray diagnoses in the field are limited by (a) technical difficulties and (b) the examination of patients before the pathologic process has become extensive.
- 4 Analysis of gastric contents and examination of stools for occult blood are of but limited value in the diagnosis of peptic ulcer.
- 5 A study of the results of the army general classification tests of patients with peptic ulcer indicates that there is no significant deviation from the normal.
- 6 The acid test described by Palmer and the relief following continuous alkaline milk drip therapy have proved to be two useful adjuncts in making the diagnosis of peptic ulcer.
- 7 The soldier with a peptic ulcer should be removed from the combat area as soon as is practicable after the diagnosis is made.

CALCIUM PANTOTHENATE FOR HUMAN ACHROMOTRICHIA

LACK OF VALUE ON PROLONGED ADMINISTRATION

IRVIN KERLAN, M.D.

AND

ROBERT P. HERWICK, M.D., PH.D.

WASHINGTON, D. C.

A recent editorial¹ in *THE JOURNAL* entitled "Vitamins for Gray Hair" reviewed the experimental evidence relating to the use of pantothenic acid and para-aminobenzoic acid to prevent and correct nutritional achromotrichia.

Controlled clinical evidence to substantiate the view that pantothenic acid will restore color to hair in human beings is not available in the scientific literature. Two articles appearing in a monthly magazine directed to the interests of women in running a household refer to the value of pantothenic acid in this respect. Irrespective of the lack of controlled clinical evidence, calcium pantothenate has been offered to the public as an effective agent for restoring color to gray hair. It is interesting to note that in the labelings of products containing calcium pantothenate the representations for the substance are directed to all persons who desire to restore "the original color to the hair." Dissemination of information concerning this alleged virtue of calcium pantothenate has been rapid and widespread.

In view of the absence of corroborative clinical data which would serve to establish that calcium pantothenate can restore color to human gray hair, it was decided to conduct a long-term study using calcium pantothenate

From the Federal Security Agency Food and Drug Administration.
¹ "Vitamins for Gray Hair" editorial *J. A. M. A.* 118:30. (Jan. 24) 1942.

to observe its effect on graying hair. It was recognized at the outset that the isolation of calcium pantothenate and its introduction for general use had been within the past few years. Consequently there had been only a relatively short period of time in which reliable observations could have been made of the change, which is reported to require from one to six, generally three, months to manifest its effect in human beings.

Studies on black haired experimental animals indicated that deprivation of pantothenic acid in diets may produce, among other changes, a patterned graying of young animals.² This observation could not, however, be considered applicable to man, since it has not been demonstrated, as pointed out by Gordon,³ that the human diet is deficient in pantothenic acid as a single factor. Furthermore, the production of graying had been accomplished only in young animals, yet the use of this article for human beings is designed for adults who have gray hair.

Recently Brandaleone, Main and Steele⁴ reported a study on the effect of calcium pantothenate on the gray hair of human beings. Their findings indicate that calcium pantothenate did not effect a change in hair color. Vorhaus, Gompertz and Feder,⁵ using calcium pantothenate in large doses by intramuscular injection, concluded that calcium pantothenate had "no effect upon gray hair present."

CLINICAL STUDY

Twenty-one white women and 6 white men ranging in age from 34 to 62 years volunteered to take calcium pantothenate for a six months period. Two white women and 4 white men in the age group 29 to 62 years offered to serve as controls by providing hair samples during the same period, but they did not take calcium pantothenate. These persons represented degrees of decrease of hair pigment varying from beginning graying to "all white." Loss of hair color had been present for varying periods (none less than ten years except 1 person who had noted rapid graying in the past three years). Several persons indicated that premature graying was a family trait. The subjects were government employees who were in the salary group who could afford and did have adequately varied diets. Discussion of recognized sources of pantothenic acid in foods provided an opportunity to suggest to the subjects the advisability of using these foods in increased amounts in planning menus. No records of daily food intake were kept, since there is no evidence in the literature that human beings are spontaneously deficient in pantothenic acid. Furthermore, the need for pantothenic acid in human nutrition has not been established. No studies of pantothenic acid levels in the blood, its absorption or excretion were undertaken.

In order to use an objective approach to evaluate the color change in the hair and thereby keep to a minimum the subjective element, it was decided to have color analyses made of the samples of hair collected before, during and at the close of the period of observation. Such color comparisons were to be made by an expert in the field of color analysis. In this manner it would be possible to obtain the unbiased opinion of one trained in color analysis who could employ without prejudice such color tests as were required and accepted, since this observer would be unfamiliar with the volunteers.

Representative samples could readily be obtained on men by collecting their hair cuttings. In the case of women, however, it was realized that during the six months period of observation no samples might be obtained. Thus it was found necessary to cut a sample of hair from a representative area of the scalp, and as the hair regrew the area was recut to furnish samples for comparison with the original sample cut shortly before the person began taking calcium pantothenate. The most significant samples were the original and the one obtained after completion of taking calcium pantothenate for six months.

For ease of administration, each user was provided daily with 2 tablets of calcium pantothenate (microbiologic analysis of the product revealed an average composition of 102 mg of d-calcium pantothenate per tablet). The generally recommended dose in the labeling of preparations of calcium pantothenate is 1 tablet (10 mg) per day. In order to provide an adequate amount of the substance, the suggested daily intake was doubled. Tablets were taken under personal supervision so that a daily opportunity to observe the persons was provided.

Observation of the volunteers throughout the period of the study revealed no change in hair color. None of the individuals reported a significant hair color change, however, several persons, particularly in the age group 34 to 40 years, felt that there was an increase in hair grayness. All the persons were satisfied that calcium pantothenate did not restore hair color. Several persons remarked that friends and acquaintances occasionally did state that they could see a "darkening" in the color of the hair, but the users themselves were unable to detect any change. It was generally acknowledged that this spurious change in hair color was occasioned by a variation in hair styling. It is obvious that frequent observation of the subjects is required in order to reach reliable conclusions. In one woman a "yellowing" effect was noted near the free ends of an isolated white band of her hair. This effect was observed after using calcium pantothenate several months. Follow-up two months after the termination of the study revealed that this yellow cast was appearing over the ends of other gray hair areas. The nature of this change is unknown, but apparently it is not significant since not infrequently such a yellow cast is noted in white and gray hair. Furthermore, this color change does not represent the original color of this woman's hair. It should be pointed out that one of the volunteers in this study had had a yellow cast in her hair for several years and was interested in observing if any change could be effected by using calcium pantothenate. No change was brought about. No significant changes were observed in the control group.

2 Morgan, A. F., and Simms, H. D. Graying of Fur and Other Disturbances in Several Species Due to a Vitamin Deficiency. *J. Nutrition* 19: 233-250 (March) 1940. Unna, Klaus, and Sampson, W. L. Effect of Para Amino Benzoic Acid on Nutritional Achromotrichia. *Proc. Soc. Exper. Biol. & Med.* 45: 309-311 (Oct.) 1940. Gyorgy, Paul, and Poling, C. E. Further Experiments on Nutritional Achromotrichia in Rats and Mice, *ibid.* 45: 773-776 (Dec.) 1940. Emerson, G. A., and Evans, H. M. Growth and Graying of Rats with Total "Filtrate Factor" and with Pantothenic Acid, *ibid.* 46: 655-658 (April) 1941.

3 Gordon, E. S., in Evans, E. A., Jr. *The Biological Action of the Vitamins*, Chicago, University of Chicago Press, 1942, p. 142.

4 Brandaleone, Harold, Main, Elizabeth and Steele, J. M. Effect of Calcium Pantothenate and Para Amino Benzoic Acid on the Gray Hair in Humans, *Proc. Soc. Exper. Biol. & Med.* 53: 47-49 (May) 1943.

5 Vorhaus, M. G., Gompertz, Michael L., and Feder, Aaron. Clinical Experiments with Riboflavin, Inositol and Calcium Pantothenate. *Am. J. Digest. Dis.* 10: 45-48 (Feb.) 1943.

It is of interest to note that 2 women complained that their fingernails were breaking and chipping more easily than usual. They questioned whether use of calcium pantothenate was a causative factor. In view of these complaints it is doubtful whether pantothenic acid can be ascribed as having a beneficial effect on the fingernails.

Color determinations of the respective samples for each of the 33 subjects, made by Dorothy Nickerson, color technologist, Research and Testing Division, Cotton and Fiber Branch, Food Distribution Administration, United States Department of Agriculture, employing visual comparisons to Munsell color standards by a method essentially the same as that described by Judd and Kelly,⁶ "revealed no significant trend of color change for any individual whether under treatment or control." These color measurements corroborated the clinical impression gained by frequent observation of the hair of the volunteers.

SUMMARY AND CONCLUSIONS

1 Twenty mg of calcium pantothenate was administered daily for six months to 27 white men and women with graying hair. Close observation of the hair of these individuals revealed no significant change.

2 Color measurements of representative samples of hair obtained from each of the subjects at the outset, during and at the conclusion of the study revealed no significant color change.

3 From these findings, from the clinical evidence available in the literature and from personal communications, it is concluded that calcium pantothenate is of no value in the restoration of color to gray hair.

6 Judd Deane B. and Kelly Kenneth L. Method of Designating Color. Research Paper 1239. United States Department of Commerce National Bureau of Standards 1939 p. 362 par. 1 of Procedure.

Beginning of Orthopedics as a Specialty—The beginning of orthopedics as a specialty, and the establishment of the first orthopedic hospitals can be traced back to the interest of the eighteenth century French humanitarians in crippled and deformed children. Jacques Mathieu Delpech, professor of surgery at Montpellier, was the real founder of the specialty. In 1828 Delpech published a treatise entitled *Orthomorphie* which is the earliest comprehensive discussion of bone and joint deformities. He also planned and built a charming orthopedic hospital in the country between Montpellier and Toulouse. A contemporary of his, Johann Georg von Heine, an instrument and brace maker to the faculty of the University of Würzburg founded an orthopedic institute in that city in 1816 which had a leading role in the development of the specialty in Germany. Heine's nephew, Bernard Heine graduated in medicine from Würzburg and became its first professor of orthopedics in 1838. In England the first orthopedic hospital was founded at Birmingham in 1817. William John Little, an eminent orthopedic surgeon who himself had a clubfoot, founded the Orthopedic Institute of London in 1837. Subsequently called the Royal Orthopedic Hospital, it became the leading British institution for the care of the crippled poor. In America two pioneer orthopedic surgeons both established special orthopedic clinics in the same year 1861. Lewis A. Sayre of New York organized a clinic at Bellevue Hospital and Buckminster Brown of Boston opened a small private hospital, the Samaritan Hospital. Two special orthopedic hospitals were shortly founded in New York: the Hospital for the Ruptured and Crippled in 1863 and the New York Orthopedic Dispensary and Hospital in 1866—Harrington C. D. and Lloyd Wyndham F. B. A Hundred Years of Medicine. New York: Sheridan House, Inc. 1943.

AUTOPSY NERVE GRAFTS IN PERIPHERAL NERVE SURGERY

CLINICAL APPLICATION, "GLUE" SUTURE TECHNIC

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Repair of peripheral nerves with preserved cadaver grafts has become one of the most promising fields of modern surgery. The results of animal experimentation and clinical application appear to justify this claim. This communication is a preliminary report dealing with the clinical application of experimental work of one of us¹ to 3 cases in which preserved cadaver grafts have been used to repair large defects in human peripheral nerves.

To appreciate the failures of peripheral nerve surgery in the past, the pathologic anatomy of the traumatized nerve must be considered. When a nerve is severed there is considerable hemorrhage into the injured area. In the process of repair this hemorrhage is replaced by scar tissue and neuroma formation even when directly sutured. The consensus is that neuromas are largely due to the outgrowth of the proximal end of the neurons trying to find their way down the distal portion of the nerve. That this is not the entire picture is suggested by the fact that when a peripheral nerve is not immediately sutured a neuroma will usually form at both the cut ends of the nerve. The proximal neuroma is usually larger than the one on the distal portion of the nerve, which suggests that neuroma formation is largely due to hemorrhage with scar formation and that growth of axons seeking their normal pathways increases the size of the neuroma on the proximal side.

The phenomenon of scar formation is largely responsible for failure to achieve a functionally perfect result in many cases in which primary suture of the nerve is possible. Even when the finest needles and suture material are used and when the sutures are placed very carefully, they will traverse the substance of the nerve, causing microscopically enormous injuries to nerve bundles about the periphery of the nerves. This increases the element of hemorrhage and scar tissue formation. The problem is more difficult when a functionally important peripheral nerve is grossly damaged or destroyed so that a considerable gap exists between the severed nerve ends.

During the twentieth century several attacks have been made on the problem of peripheral nerve surgery. Fresh homografts from other small nonessential nerves have been utilized. Grafts of fat fascial flaps and nerve flaps all have been tried with equally discouraging results. The first forward step was contributed by Ballance and Duell² in 1932. These men were able to show excellent results in bridging a gap in the facial

From the Neurological Service of Roland M. Klemme, M.D., professor of surgery, chairman of the Division of Neurosurgery, St. Louis University School of Medicine.

1 de Rezende, N. T. New York J. Med. 12: 2124 (Nov. 15) 1947.
2 Ballance, C. A. and Duell, A. B. Arch. Otolaryng. 15: 1 (Jan.) 1932. Tr. Am. Otol. Soc. 21: 288 (1931). Laryng. 55: 27 (1931).

nerve in the fallopian canal of baboons. They have also been able to bridge a similar gap in man by use of a graft taken from the external cutaneous nerve of the thigh of the same patient. No sutures were used, the graft being kept in place by careful dressing and by the bony configuration of the canal.

Bentley and Hill³ in 1940 reported their experiences using sutures in their cases of experimental grafts from other animals of the same species, in the monkey. This was the first step in the solution of the technical problem of bridging gaps in peripheral nerves without the use of heroic measures such as nerve transplantation and plaster casts to hold extremities in positions favorable to nerve union.

Young and Medawar⁴ of Oxford in the same year suggested the use of coagulable plasma with the consistency of "glue" to replace the sutures of severed nerves. They advocated the use of a fortified cockerel plasma with chick embryo extract as the clotting agent. This plasma "glue," rich in fibrinogen, was placed in the gap, forming a bridge between the severed ends

nerve injuries. On May 29, 1941 at the Harvey Cushing Society, Rochester, N. Y., and in 1942 at the annual meeting of the New York State Medical Society one of us¹ reported the results of the use of sections of "cadaver grafts" (sections of peripheral nerves of cadavers) in bridging gaps of various lengths in sciatic nerves of monkeys, dogs, cats and rabbits. This work was carried out at the Yale University School of Medicine Laboratory of Physiology and extended over a period of two years' time, thus allowing a rather extensive study of the problem.

A search was made for a better and more accessible "glue" than any before suggested. The results indicated that 50 per cent pure acacia or acacia fortified with vitamin B and B complex caused the least tissue reaction and gave the best result. The free nerve ends and graft were first anchored lightly in place by "bridges of silk," silk sutures placed over the free nerve ends and the graft into surrounding tissue but not entering any of these structures.

In further prosecution of this work at the Mayo Clinic in the Experimental Institute in conjunction with Dr. H. E. Essex, Rezende⁶ utilized the modified "ear window" of Clark to study this problem further. It was found that in rabbits the first observable phenomenon at the site of a "glued cadaver graft" of the posterior auricular nerve of a rabbit was an outgrowth of capillaries from the proximal side across the gap into the graft. This capillary framework was followed by the outgrowth of the severed axons. This study suggests that the role played by the acacia glue is merely that of a cement holding the graft in place. The cadaver graft merely acts as a framework of tubes for ingrowth of the severed axons.

CLINICAL APPLICATION

Three clinical applications of these experiments have been completed at the present time. In others the elapsed time is not great enough to include in this report. The grafts and glue have been prepared as suggested by Rezende¹. The glue used was 50 per cent acacia prepared by slowly dissolving the acacia in boiling distilled water. This percentage gives a thick glue when cooled to room temperature. The glue may be autoclaved without deleterious effect.

The cadaver grafts were obtained under practically sterile conditions in the autopsy room. The sections of nerves were handled very gently and all connective tissue was removed as completely as possible. The grafts were placed on cardboard by means of thumb tacks and then suspended in solution of formaldehyde U. S. P. diluted 1:10. They were left in this solution for from ten to thirty days, after which time they were washed in distilled water for forty-eight hours. They were transferred to 75 per cent alcohol two or three days before the proposed operation. One-half hour before the operation they were transferred from the alcohol to saline solution.

The injured nerves were carefully exposed and the damage to the nerves was assayed. Flaps of the nerve sheaths were then carefully dissected from both sides of the neuroma proximally and distally (fig. 1B). These flaps were then sutured to the surrounding connective tissue before the removal of the neuromas. This keeps the proximal and distal nerve sections anchored and allows a stable position for location of the graft. The neuroma is next resected distally and

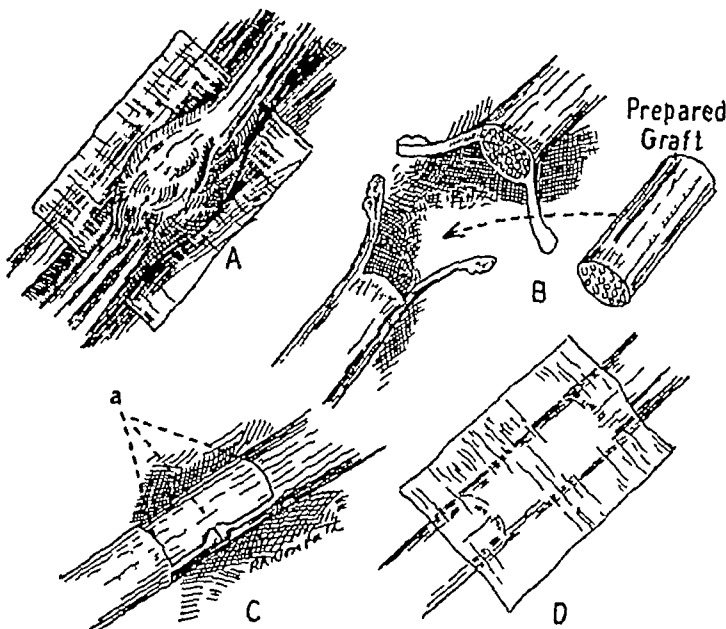


Fig. 1—A, neuroma, and the allantoic membrane as future bed. B, flaps of the nerve sheath dissected from both sides of nerve, proximally and distally, prepared graft cut to size. C, prepared graft in place—glued. D, allantoic membrane placed around nerve ends and graft.

and forming a trestle for the growth of the proximal axons into the sheaths of the distal fragments of the severed nerves.

Tarlov and Benjamin⁵ of New York found considerable fibrosis at the site with the use of this material when they repeated these experiments. They in turn evolved the method of using autologous plasma fortified with autologous muscle extract. They state that this is easy to prepare and that this material causes less inflammatory reaction and subsequent scar formation at the site. They concluded, however, that this material was not practicable when there was any tension on the severed nerve ends and that silk sutures were probably better in these cases.

The subject of peripheral nerve surgery was made most important in this country on Dec. 7, 1941. Statistics from various and sundry wars have shown that from 1 to 3 per cent of war casualties have peripheral

³ Bentley, F. H., and Hill, Margaret. *Brit. M. J.* 2: 352-353 (Sept. 14) 1940.

⁴ Young, J. Z., and Medawar, P. B. *Lancet* 2: 126-128 (Aug. 3) 1940.

⁵ Tarlov, I. M., and Benjamin, Bernard. *Science* 95: 258 (March 6) 1942.

⁶ de Rezende, N. T. Work to be published.

proximally. Light pressure is exerted on the severed nerve ends to stop hemorrhage. When this has been done the graft is carefully cut to fit, a new safety razor blade being used for this purpose. A bed of allantoid membrane (insultoric) is next placed around the nerve ends, and the graft is placed on this bed between the severed ends (figs 1A and C). Two or three drops of 50 per cent acacia prepared as described are then placed on each junction. A second layer of allantoid membrane is then placed over the graft and the proximal and distal ends of the peripheral nerve, which at this stage must be in good alignment (fig 1D). This is allowed to stand for a few minutes. The wound is closed carefully in layers with interrupted silk sutures. An ordinary snug fitting bandage is used and no further immobilization is necessary.

The first patient was operated on on Aug 27, 1942.

CASE 1—V S, a white girl aged 8 years, admitted to St. Louis City Hospital on March 4, 1942 because of a rather large laceration of the right popliteal space, had fallen from a swing at 5:45 p.m. on the date of admission and had cut the right popliteal area on a sharp piece of tin. A tourniquet had been applied to stop the bleeding, and the child was brought to the hospital. Tetanus antitoxin and perfringens antitoxin were administered in the accident room.

The patient complained bitterly of pain behind the right knee. The temperature was 99 F, pulse rate 124 and respiratory rate 26. Blood pressure was 120 systolic, 80 diastolic. Examination of the extremities showed a 4 inch laceration extending horizontally across the right popliteal space. This extended through the skin and subcutaneous tissues, exposing the deep structures. The skin margins were



Fig 2—Sensory loss before operation

widely separated. The patient was taken to the operating room and the laceration was sutured in the usual fashion after debridement. The tendons of the semitendinosus and the gastrocnemius muscles were found to be severed. The common peroneal and the sural nerves had also been cut. The cut ends of the tendons and of the common peroneal nerve were approximated and sutured with fine silk. The leg was placed in an anterior plaster splint with 120 degrees flexion. The wound healed nicely and the sutures were removed on March 20. The patient was discharged on April 17, 1942 with a walking right ankle stop brace. She continued to have a foot drop and sensory defect (fig 2).

She was readmitted on Aug 3, 1942 complaining of continued foot drop and sensory defect. On August 26 a nerve graft operation was done.

Under drop ether anesthesia iodine and alcohol preparation an incision was made over the popliteal fossa on the right to expose the common peroneal nerve. The deep fascia was incised and retracted laterally. The neuromas were then encountered at the separated ends of the common peroneal nerve. These were freed. All bleeding was controlled. A bed of amniotic membrane (insultoric) was prepared beneath the nerve ends and clipped in place with Klemme clips. The neuromas were then excised and a prepared graft was adjusted between the cut ends of the nerve. These were held in place with bridges of silk as described¹ which did not penetrate the nerve sheath. The wound was then closed loosely with interrupted silk sutures. A dry gauze dressing was applied.

The patient's postoperative course was uneventful and she was discharged from the hospital on Sept 11, 1942. At the present time she is walking with a slight limp but without a brace. She can tap dance and runs easily on both feet. The

sensory defect is clearing rapidly and the size of the calf of the leg is almost equal to that of the left leg. She is now receiving hot-wet applications to the limb twice daily.

CASE 2—C S, a white man aged 35, was first admitted to St. Louis City Hospital on July 28, 1942 complaining of pain and loss of sensation in the fourth and fifth fingers of the left hand. Ten months before admission he had suffered a bullet wound in the left chest while cleaning a rifle. From that time on there had been sensory and motor changes in the left hand including paralysis of the fingers, some difficulty in movement of the arm and anesthesia of the little and ring fingers. Three days before admission his left little finger began to swell at the tip. This swelling gradually extended proximally. Along with this swelling he experienced considerable pain. The patient was chronically addicted to alcohol, drinking about a pint of whisky a day. Examination showed an area of anesthesia involving the lateral half of the lower arm extending over the lateral half of operation.

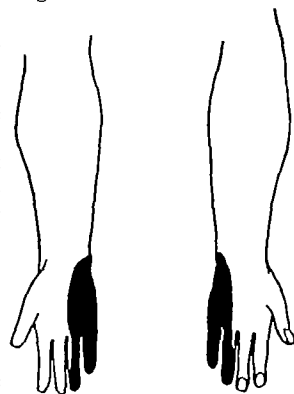


Fig 3—Sensory loss before operation

the ring finger and the little finger. There was a scar over the knuckle of the little finger, and the phalanx distal to this was swollen and red. There was no pain on pressure over this finger. The temperature on admission was 100.6 F and was normal thereafter. The swelling of the finger rapidly subsided. The laboratory work was entirely normal. The patient was discharged on Aug 1, 1942.

He was readmitted on Oct 26, 1942 for a nerve graft operation. The operation was done on November 16.

With the patient under ether anesthesia an incision was made along the lateral border of the left pectoralis major muscle. The brachial plexus, axillary artery and vein were exposed. A neuroma of the ulnar nerve was isolated and separated from the axillary vein. Nerve sheath flaps were dissected free from proximal and distal ends of the neuroma and sutured in place. The neuroma was then excised, leaving a gap in the nerve about 2 cm long. This was replaced by a cadaver nerve graft. Fifty per cent acacia was then used to cement the nerves together. A piece of allantoid membrane (insultoric) was then placed over the graft and the severed nerve ends. The wound was closed carefully in layers with interrupted silk sutures. No drain was used.

The postoperative course was completely uneventful. The section of neuroma removed consisted of fibrous tissue con-

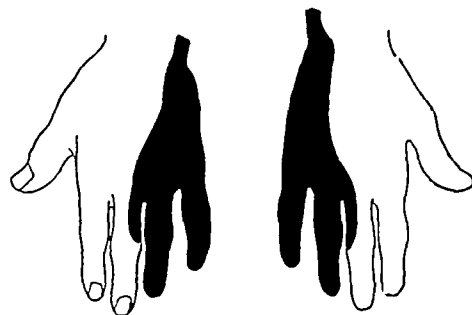


Fig 4—Sensory loss before operation.

taining bundles of medullated nerve fibers. The fibers stained poorly and contained many vacuolated areas.

The patient was discharged on Nov 23, 1942. When last seen he was beginning to have return of function in his fingers.

CASE 3—N T, a white youth aged 18 referred by Dr D I Zerbosho of Benld Ill., admitted to St. Mary's Hospital on Jan 15, 1943, complained chiefly of paralysis of the fingers of his left hand for six and one-half months. He had fallen and cut his left wrist on a plate glass window. The wound was immediately sutured. A day or two later he noted loss of

sensation in his little and ring fingers and weakness of those fingers. Physical examination was negative except for the left hand. There was a sensory loss over the lateral half of the ring finger and over the entire little finger and the hypothenar eminence. There was a loss of abduction and adduction of the fingers. A $2\frac{1}{2}$ inch scar showed on the volar aspect and the ulnar side of the forearm. The laboratory work was negative. An operation was done on Jan 18, 1943.

With the patient under avertin with amylene hydrate and ether anesthesia an incision was made through the old scar. The ulnar nerve was isolated and a rather large neuroma was found in the nerve. Four small flaps of nerve sheath were sutured to the surrounding tissue and the neuroma was excised. The prepared nerve graft was then placed between the cut ends on a bed of allantoid membrane (insultoric). Fifty per cent acacia was placed over the nerve junctions and the wound was closed in layers with interrupted black silk sutures. A dry gauze dressing was applied.

The patient was discharged on Jan 22, 1943. At the present time he is doing well, complete function has not returned to the fingers, but it is still too early to judge the result.

COMMENT

Time of Operation—The majority of surgeons have emphasized that there are two optional times for operation: one, as soon as possible after the injury has occurred, the other, after wound healing is complete. In the first three hours following an injury it is possible in the majority of cases to change contaminated wounds into clean wounds and to carry out repair. Healing is thus effected by primary union. If an open wound heals without infection, a secondary operation can be performed three or four weeks later. If the original injury is complicated by infection, a secondary operation must be postponed until the wound is clean and all inflammatory reaction has disappeared completely. We believe that the advent of the sulfonamides and gramicidin will mean a great advancement in this kind of surgery, sterilizing the infected wounds and permitting an early operation.

The question of how to treat a freshly severed nerve is a difficult one. If there is any tension on the nerve we believe that a graft, if available, should be used to bridge the gap. However, a graft can always be applied later if immediate suture is unsuccessful.

Graft—Professor Lavrentjev of Russia has studied many aspects of the regeneration of peripheral nerves and claims to have found evidence of a "chemicomotor role" of the distal (peripheral) segment in attracting nerve fibers to itself. Using pieces of spinal cord as transplants for bridging gaps after nerve lesions he found that the best results were obtained by using nerve treated with formaldehyde, since this was quickly vascularized and delayed the proliferation of the connective tissue elements of the scar.

Sutures—We do not believe that it is possible to suture the epineurium of nerves without laceration of a great number of the axis bundles, even with the finest needles and finest silk. Of course, in small nerves it is impossible to suture without laceration of the majority of nerve fibers. For these reasons we think that the acacia "glue" reinforced with "flaps of the neuroma" and if necessary also with the "bridge of silk" is the ideal way to keep the graft and nerve ends in good alignment.

Control of Hemorrhage—In surgery of peripheral nerves the control of hemorrhage is of paramount importance if scar tissue formation is to be prevented. Some surgeons use an inflated blood pressure cuff on the extremity, located proximal to the wound, during the

operation. We have not used this procedure but prefer to control the hemorrhage of each vessel that bleeds. Before excising the neuroma the assistant should apply light pressure with a small piece of cotton soaked in saline solution to the proximal and distal portion of the nerve after the neuroma has been excised. This pressure should be sufficient just to stop any bleeding from the severed nerve. The graft is then placed in the gap between the two ends of the nerve and at the same time two or three drops of acacia "glue" are applied to the junction of the graft and severed nerve to act as a cementing agent. If the intraneural hemorrhage is prevented, the tendency toward neuroma formation is obviated and an ideal situation is created for the neurotization of the graft. These findings will be reported in greater detail in a later communication.

Physical Therapy—From observations made with the ear window of Clark, it seems that measures directed toward the promotion of vascularization of the graft give the most aid in obtaining a successful clinical result. Accordingly, two weeks after operation we advise application of moist heat to the grafted area. Lavrentjev⁷ has also emphasized that "the only means found for accelerating nervous regeneration is heat."

Immobilization—A simple snug fitting bandage was used for immobilization in each of these 3 cases. We believe that elaborate systems of splints are unnecessary and harmful. In the first place they are likely to produce trophic ulcers unless very carefully applied. In the second place moderate activity of the extremity promotes vascularization of the nerve graft and more rapid growth of nerve fibers.

Massage and Motion—Gentle massage and motion are begun not earlier than two weeks postoperatively.

Electrotherapy—The results of investigations are not in agreement about the effects of electrical stimulation in retarding the rate of atrophy following denervation of muscles. Fischer⁸ and the Guttmanns⁹ reported favorably, but Chor and his co-workers¹⁰ obtained discouraging results. Hines, Thomson and Lazere¹¹ at the University of Iowa concluded that "artificial stimulation retarded the rate of atrophy and enhanced the regeneration of denervated muscle." We have used gentle stimulation in some instances and we are of the opinion that it is of value in bringing about more rapid return of function after nerve grafting has been done.

CONCLUSIONS

The first clinical application of cadaver graft, using 50 per cent acacia to glue the severed ends together, has been made. The first patient already has a good clinical result with return of motor and sensory function. The second patient is already beginning to get return of function. The third case is too recent to make it possible to judge.

The postoperative care of a patient operated on with a peripheral nerve injury is a very important factor for recovery. Any method that can increase the local circulation will be of primary importance in the process of physiologic recovery.

4952 Maryland Avenue.

- 7 Lavrentjev, Surg. Gynec. & Obst. **75**: 572 (Dec.) 1942.
- 8 Fischer, Ernst, Am. J. Physiol. **127**: 605 (Nov.) 1939.
- 9 Guttmann, Ernest, and Guttmann, Ludwig, Lancet **1**: 169 (Feb. 7) 1942.
- 10 Chor, Herman, Cleveland; David, Davenport, H. A., Dolkart, R. E., and Beard, Gertrude, Physiotherapy Rev. **19**: 340 (Nov-Dec) 1939.
- 11 Hines, H. M., Thomson, J. D., and Lazere, B., Am. J. Physiol. **137**: 527 (Oct.) 1942.

PERITHYROIDITIS

A DISTINCT ENTITY

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CINCINNATI

As I¹ pointed out in a recent article on the subject, I feel that Riedel's struma is the result of a previous perithyroiditis which causes a partial constriction of the vessels entering the thyroid gland. Another case of Riedel's struma, in which I lately operated, has served to strengthen my belief that such is the etiology of this condition and has, in addition, focused my attention on perithyroiditis as a distinct entity.

My own observations on a series of cases, including the one here reported in detail, have convinced me of the etiologic relationship between perithyroiditis and woody thyroiditis. I believe that, as a result of the perithyroiditis, the fibrous growth characteristic of the disease begins outside rather than within the thyroid gland. Histologic evidence indicates that, as a sequel to perithyroiditis and its complications, there results partial occlusion of the blood vessels entering the gland with subsequent formation of the fibrous tissue characteristic of Riedel's struma. In other words, because of the perithyroiditis it appears to me that Riedel's struma is a vascular rather than a glandular disease.

From all of this evidence I believe that perithyroiditis warrants more consideration than seems to have been given to it in the past. Indeed, little if anything has been written about perithyroiditis. A search of the available medical literature has failed to reveal any reference to such a condition. A similar search of the current textbooks on medicine, surgery and pathology was also in vain. This paucity of information is rather surprising in view of the fact that for some time surgeons have recognized evidence of perithyroiditis in the form of adherent muscles and perilymphangitis.

It is quite possible that the clinician has been diagnosing cases of this type as acute nonsuppurating thyroiditis when in reality they were cases of perithyroiditis. If perithyroiditis really occurs as a clinical entity—and the evidence which I have accumulated indicates that it does—what are the acute symptoms and what are the pathologic changes?

The thyroid gland, as observers know, is covered by a network of lymphatic vessels and lymphatic glands. Although this concept was never established by proof it was thought at one time that the thyroid secretions left the thyroid gland by way of these channels. However, evidence has been found that lymphangitis is present in many cases of goiter, even those of a chronic nature. In perithyroiditis, lymphangitis is often a concomitant part of the elements contributory to Riedel's struma.

Since becoming interested in the subject of perithyroiditis I have encountered a number of patients with diffuse enlargement of the thyroid gland (from two to three times normal size) who gave a history of an acute onset with varying degrees of fever and, occasionally, chilliness. These patients complained of pain in the thyroid region and the thyroid gland was tender on palpation. However, there was no visible evidence of inflammation. Moreover, when these patients were seen as late as eight weeks after onset of their illness

the lobes were still tender although the temperature and the blood count had returned to normal. These symptoms are typical and in my opinion characterize the entity perithyroiditis.

Because of the continued tightness of the throat, the persistent enlargement of hardened consistency and the nervousness of these patients I have operated on a number of them shortly after subsidence of the acute symptoms, that is, after periods ranging from two to twelve weeks. In all instances the basal metabolic rates were normal or only slightly elevated. Thus, in 2 cases previously reported¹ the average basal metabolic rates were plus 16 and plus 20 respectively.

One recent case is rather interesting and indicative of the course of events during and following perithy-

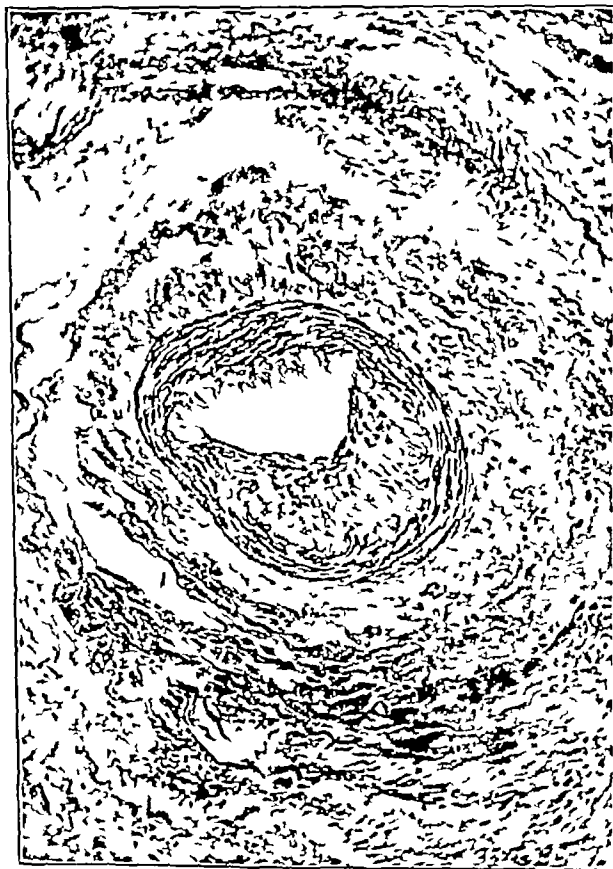


Fig 1—Section of a small artery showing hypertrophy of the media with reduction of the lumen and a surrounding collar of dense hyalinized connective tissue. Hortega silver impregnation stain.

roiditis. The temperature ranged from 99 to 101.6 F for a period of eight weeks without any evidence of suppuration. Chemotherapy was instituted but did not influence the course of the disease. After eight weeks of hospitalization, during which the patient was kept in bed, high voltage roentgen therapy was applied. Following a few treatments the temperature returned to normal and the tenderness disappeared. Nonetheless the hard swollen condition of the gland persisted, with the consistency of woody thyroiditis. Six months have now elapsed but the patient refuses operation and complains only of some tightness around the throat and slight nervousness.

The other cases in which surgical intervention has been undertaken including those already reported and the one to be herein discussed presented the typical

From the Department of Surgery, DeCourcy Clinic and the Good Samaritan Hospital.
¹ DeCourcy, J. I. New Theory Concerning Etiology of Riedel's Struma. *Surgery* 12: 54 (Nov.) 1942.

picture of Riedel's struma with adherent muscles surrounding the gland. The evidences of perithyroiditis included pseudo giant cells, arteriolar sclerosis and other distinctive characteristics of the disease. These are



Fig 2—Section of a precapillary arteriole showing subintimal thickening, medial thickening and a collar of dense hyalinized connective tissue. The entire structure is surrounded by dense connective tissue stroma. Hortega silver impregnation stain.

quite apparent in the photomicrographs of histologic sections previously and herewith presented.

The following report of a case which I was able to follow through to a satisfactory conclusion serves to substantiate my views not only with regard to perithyroiditis as an entity but also with respect to its relationship in the etiology of Riedel's struma.

REPORT OF CASE

C N, a married woman aged 33, who entered the Good Samaritan Hospital on Feb 13, 1943, developed what seemed to be a mild sore throat three weeks prior to admission, while in Detroit. She had daily chills, after which her temperature went to 103 F. A physician treated her for three weeks, during which time the chills and fever continued. Before leaving for Detroit, and one month prior to the onset of the present illness, she had a complete physical examination at the clinic. The patient reported that she had no enlargement of the thyroid gland and no symptoms pertaining to the gland prior to her present illness.

When examined at the Good Samaritan Hospital in Cincinnati, where she reported as a result of an exacerbation of her condition, her temperature was found to be 101.4 F, the pulse rate 120 and the respiratory rate 20. Blood examination revealed hemoglobin 85 per cent, red blood cells 4,500,000, white blood cells 14,500, polymorphonuclears 82 per cent, lymphocytes 16 per cent, monocytes 1 per cent and eosinophils 1 per cent. The urine had a specific gravity of 1.017, was negative for albumin, sugar and acetone, and showed 4 white blood cells per high power microscopic field and no red blood cells.

The patient had three chills followed by fever on three successive days after admission to the hospital. After this her temperature returned to normal without treatment.

An electrocardiogram taken on February 14, the day after admission, showed definite sinus tachycardia with one premature ventricular systole. X-ray examination of the chest on the same day gave negative results.

Blood examination on February 15 revealed hemoglobin 87 per cent, red blood cells 4,450,000, white blood cells 8,200, polymorphonuclears 77 per cent, lymphocytes 19 per cent, eosinophils 1 per cent, monocytes 3 per cent and stab cells 8 per cent.

Blood cultures made on February 15, 16 and 17 were negative after eighteen hours, forty-two hours and three days. A blood culture made on February 18 was negative after forty-two hours. The blood was negative for malarial parasites, typhoid bacilli, *Brucella melitensis*, and *Brucella abortus* of bovine origin.

A tentative diagnosis made by the house physician was "possible subacute bacterial endocarditis."

On February 17, four days after her admission, I examined the patient in consultation. She was a rather small woman who did not look particularly sick. Her temperature was 99.2 F, the pulse rate 110, the respiratory rate 18. There was a slight tremor to the outstretched fingers. A mild systolic murmur was heard at the apex of the heart. Ocular signs were absent. Two basal metabolic tests gave rates of plus 18 and plus 14.

The thyroid gland was about two to three times the normal size and of hard consistency. The lobes were tender to the



Fig 3—Section of precapillary arterioles showing obliteration and surrounded by dense hyalinized connective tissue. Hortega silver impregnation stain.

touch, the tenderness extending laterally and upward in the neck beyond the lobes. The patient stated that she had first noticed the tenderness over her neck when, one week after the onset of her illness, her nephew, aged 5, had thrown his arms about her neck. There was no external evidence of inflammation.

A diagnosis of Riedel's struma was made. Strong solution of iodine was given in the dosage of 10 drops three times a day for one week.

Operation performed on February 24 confirmed the diagnosis both grossly and microscopically. The muscles were found to be adherent over both lobes of the gland, the process extending well up the sides. The microscopic diagnosis was made by Dr William German, pathologist to the Good Samaritan Hospital, who reported that section showed extensive diffuse fibrosis replacing gland bearing tissue. There were progressive strangulation of lobules, abundant new formation of connective tissue and numerous pseudo giant cells. The small arterioles showed extensive sclerosis with perivascular sclerosis. Some of this had been of rapid and recent origin and had resulted in small focal areas of necrosis, similar to those found in necrotizing arteriolonephrosclerosis. The amount of actual lymphoid tissue was scanty. There was pronounced sclerosis of the gland capsule. No cancer was present. The diagnosis was Riedel's struma (struma fibrosa of the thyroid gland).

The patient made an uninterrupted convalescence. By March 3 the heart murmur had disappeared.

COMMENT

This is the fifth case of Riedel's struma with an acute onset seen by me during the past eighteen months. Three of these cases have been verified by operation. Two were reported previously. Two of the patients refused operation.

In addition to the acute onset, all of these cases presented certain common characteristics which I consider to be a part of the perithyroiditis entity. Among these may be included such symptoms as fever of varying degrees (often with chilliness), pain or other discomfort in the thyroid region, absence of visible inflammation and persistence of tenderness in the lobes after other symptoms, more especially the fluctuations of temperature, have subsided. In general, the history is negative as to previous involvement or dysfunction of the thyroid gland.

The basal metabolic rate appears to be unaffected or at most only slightly elevated. Subsidence of acute symptoms has generally been followed by nervousness, fine tremors, continued tightness of the throat and persistent enlargement of hardened consistency. Riedel's struma has been the end result as verified post-operatively in 3 of 5 cases displaying this train of symptoms.

The surgeon seldom sees Riedel's struma until the acute phase has subsided. I have been fortunate enough to secure good case histories which enabled me to obtain a clearer picture of the complete syndrome. On the basis of my observations it seems likely that in diagnosing acute nonsuppurating thyroiditis observers have been witnessing the onset of Riedel's struma. None of the glands affected with this disease suppurate. It has been my experience that suppurative thyroiditis develops within a comparatively short time and that it is usually accompanied by cellulitis of the neck. In contrast early fibrosis was the rule in the cases under discussion.

One must not overlook the fact that during the acute phase of perithyroiditis the febrile symptoms are so mild as to cause many of the patients to go untreated. Not infrequently the condition is diagnosed as grip or cervical adenitis. The soreness disappears and the patient leaves the physician's care only to seek a surgeon later.

In view of these findings the explanation which I offer is that primary perithyroiditis with the adherent edematous muscles and lymphangitis partially occludes the blood vessels entering the thyroid gland and causes

the entity known as Riedel's struma. In brief, Riedel's struma is a vascular rather than a glandular disease.

This contention is borne out by both the gross and the microscopic appearance of the excised glands, but more especially by the histologic sections. In the photomicrographs presented it may be seen that the picture strikingly resembles that of the kidneys described by Goldblatt and his associates² in which the renal arteries were partially constricted.

While on the subject I should like to revert briefly to the role of iodine in the etiology of Riedel's struma. In the previous discussion¹ I expressed doubt that iodine entered the picture. These doubts have been strengthened as a result of further observations. Iodine does not seem to be a causative factor, because in a recent case of eight weeks' standing the patient had been given no iodine before the onset of the disease.

SUMMARY AND CONCLUSIONS

Perithyroiditis is a distinct entity with a definite train of symptoms and sequelae. Perithyroiditis is the etiologic factor in the formation of Riedel's struma. Additional evidence submitted tends to confirm the view that Riedel's struma is a vascular rather than a glandular condition.

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ELECTRONMICROGRAPHY OF MURINE POLIOMYELITIS VIRUS PREPARATIONS

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Following isolation and identification of the murine strain of SK poliomyelitis virus¹ in this laboratory, subsequent work has been concerned with purification of the infectious agent. By using physical and chemical methods of extraction and concentration, highly potent virus preparations were obtained from infected mouse brains. These preparations possessed an appreciable degree of physical homogeneity, as determined by ultracentrifugation, and reacted in precipitin tests with specific antiviral serums.² The purified material seemed to offer a good opportunity to gather additional information on the morphologic characteristics of the infectious agent by means of further study with the electron microscope. For the same purpose there were also available tissue culture preparations of SK murine virus. The latter were examined in the unpurified state.

The work to be described in this paper was carried out in collaboration with the staff of the Physics Divi-

2 Goldblatt, Harry, Lynch, J., Hanzal, R. F. and Summerville, W. W. Studies on Experimental Hypertension. Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia. *J. Exper. Med.* 59: 347 (March) 1934. Goldblatt, Harry. Studies on Experimental Hypertension. Production of Malignant Phase of Hypertension. *ibid.* 67: 809 (May) 1938. Experimental Hypertension Induced by Renal Ischemia. Harvey Lecture. *Bull. New York Acad. Med.* 14: 523 (Sept.) 1938.

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This work was supported by grants from the Warner Institute for Therapeutic Research, the Philip Hanson Hiss Jr. Memorial Fund and gifts from anonymous donors.

1 Jungeblut, C. W. and Sanders, Murray. Studies of a Murine Strain of Poliomyelitis Virus in Cotton Rats and White Mice. *J. Exper. Med.* 72: 407 (Oct.) 1940. Jungeblut, C. W., Sanders, Murray and Feimer, R. R. Further Experiment with the Murine Strain of Poliomyelitis Virus. *ibid.* 75: 611 (June) 1942.

2 Bourdillon, Jacques. Purification, Sedimentation and Serological Reactions of the Murine Strain of SK Poliomyelitis Virus. *Arch. Biochem.* to be published.

sion of the Research Laboratories of the American Cyanamid Company at Stamford, Conn. The instrument employed was the commercial RCA model which permitted primary magnifications between 1 5,000 and 1 8,000. The original negatives were further enlarged to final scales of from 1 14,500 to 1 20,000.

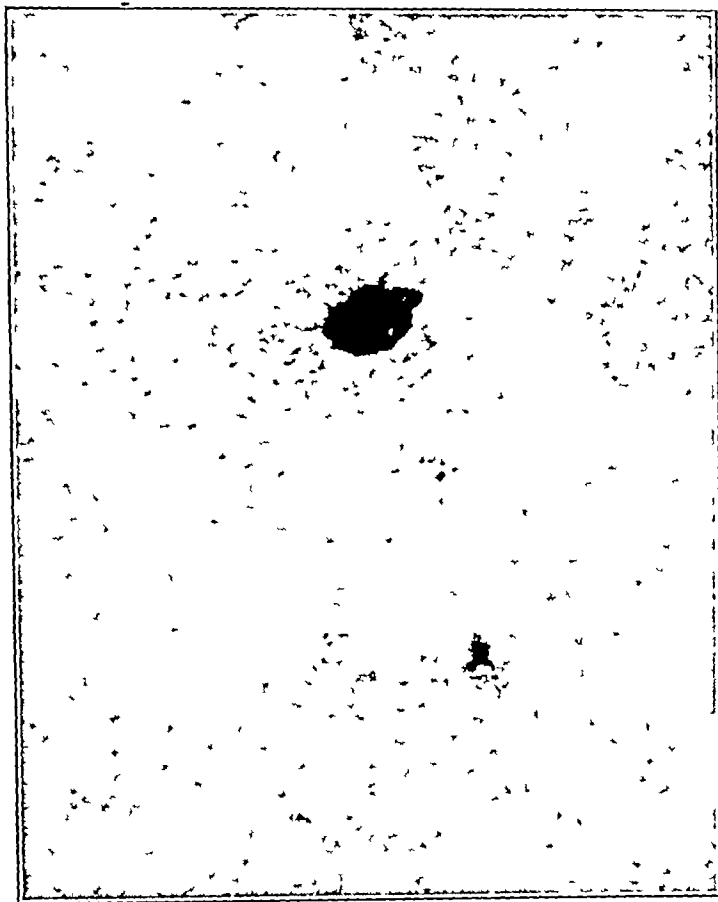


Fig. 1—Sample of purified SK murine virus prepared by extraction from infected mouse brains and suspended in a 0.01 per cent solution of sodium phosphate, $\times 14,500$.

EXPERIMENTAL WORK

Materials—Purified SK murine virus obtained from infected mouse brains (270th-320th passage) by chemical extraction and sedimentation in the ultracentrifuge, as described in detail elsewhere,² was dialyzed in a cellophane bag against distilled water or dilute buffer for twenty-four hours at icebox temperature. The sample, when tested for potency in mice, had an intracerebral titer of between 10^9 and 10^{10} minimum lethal doses. A control preparation, made from normal mouse brain by using the same methods of purification, was similarly dialyzed. It was noninfectious for mice. SK murine tissue culture virus was obtained by growing the strain for three days at 37 C in a medium consisting of minced embryonic mouse brain in ox serum ultrafiltrate. The composition of this medium and the properties of SK tissue culture virus have been fully described before.³ The supernatant fluid of SK murine virus tissue cultures (200th and subsequent passages), when tested for potency in mice, gave an intracerebral titer of 10^9 minimum lethal doses. These virus preparations, without preliminary purification of any kind, were dialyzed against distilled water for twenty-four hours in the icebox. A control preparation made from noninoculated, but incubated, tissue culture medium was similarly dialyzed.

Electron microscope preparations were made from the various virus and control materials described by

applying a drop of fluid to a collodion film which, after thorough drying, was exposed to the electronic beam. In the case of each preparation, at least four different fields were selected and photographed. Focusing was greatly handicapped by the fact that most preparations contained little or no material that could be seen directly on the fluorescent screen.

Results—A considerable number of pictures were thus obtained. Most of these showed a confusing multitude of bodies of varying size and shape or amorphous aggregates. Because of their haphazard occurrence in both viral and control material, it was obvious that none of these forms bore any manifest relationship to the infectious agent. In certain photographs of virus preparations, however, structures were observed which could not be found in any of the several control preparations examined. The electronmicrograms of these particular virus preparations, together with photographs of corresponding control preparations, are reproduced in the accompanying illustrations.

Figure 1 shows an electronmicrogram ($1 \times 14,500$) of a sample of purified SK murine virus, prepared by extraction from infected mouse brains and suspended in a 0.01 per cent solution of sodium phosphate. It reveals the presence of a large number of small, round or elliptic, fairly well defined bodies, some of which occur without distinct grouping, whereas others seem to be aligned in pairs or short chain formation. These

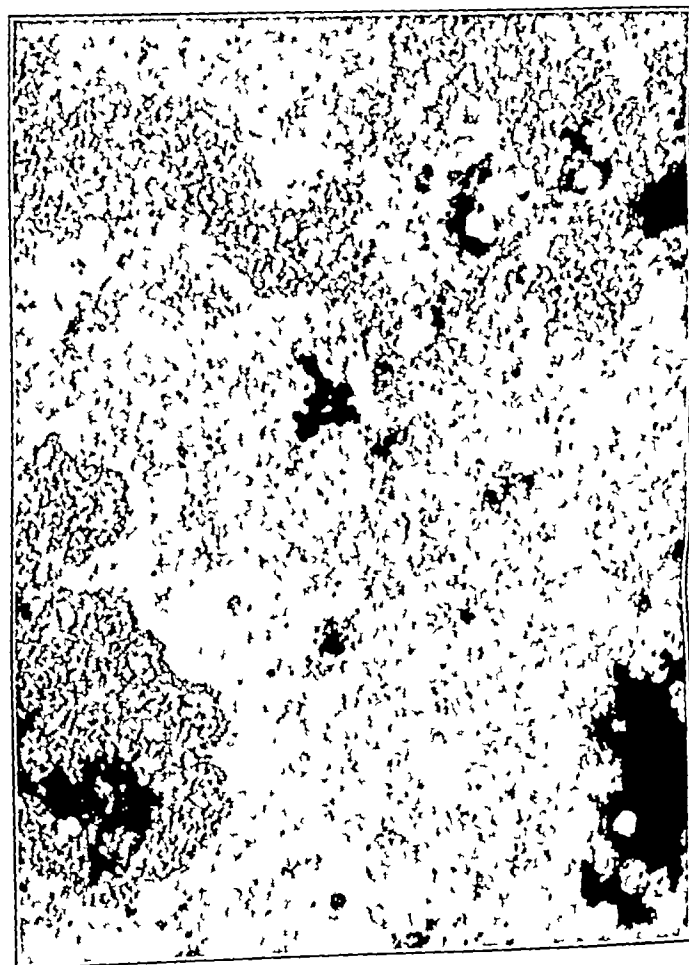


Fig. 2—Another sample of the preparation shown in figure 1 previously treated with 0.25 per cent calcium chloride solution, $\times 14,500$.

bodies appear to be all of more or less uniform size, measuring slightly less than 0.5 μ in diameter on the picture, which would correspond to an actual size of 25 to 30 millimicrons. In figure 2 is shown an electronmicrogram ($1 \times 14,500$) of another sample of the same preparation, but previously treated with 0.25

³ Sanders, Murray, and Jungeblut, C. W. Cultivation of the Murine Strain of SK Poliomyelitis Virus, *J. Exper. Med.* 75: 631 (June) 1942.

per cent calcium chloride solution. This picture presents, among much aggregated material, bodies of essentially similar morphology except that they possess a slightly sharper contour. Figure 3 is an electronmicrogram ($1 \times 14,500$) of a control sample of material obtained by extracting and concentrating normal

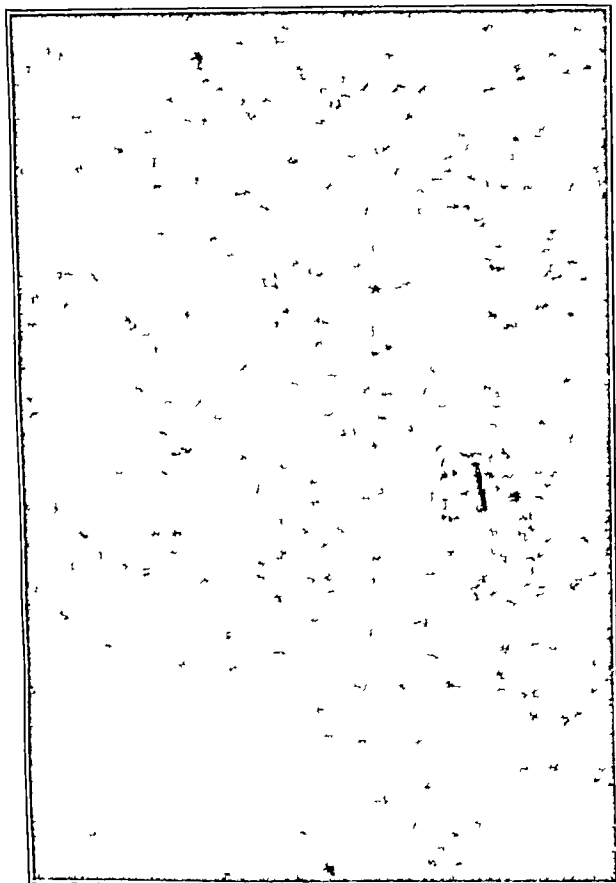


Fig 3—Control sample of material obtained by extracting and concentrating normal mouse brain $\times 14,500$

mouse brain by chemical and physical procedures analogous to the procedure employed for the purification of infected mouse brain. This picture shows the presence of a large number of ill defined, heterogeneous structures, mostly of dissimilar size, none of which bear any morphologic resemblance to the bodies observed with the two virus preparations mentioned before.

The next three illustrations deal with electronmicrographs obtained from unpurified tissue cultures of SK murine virus and uninoculated tissue culture preparations. Figure 4 is an electronmicrogram of SK murine tissue culture virus ($1 \times 20,000$). It shows among much heterogeneous material the presence of numerous thin but rather long filamentous threads, which sometimes lie so close together that they appear to form a network. Occasional threads seem to contain, at certain points along their axis or at the end, small spherical or elliptic bodies which give to the entire structure the appearance of beads or buds. The individual threads seem to be all of the same width, i.e., approximately 20 millimicrons, but of different length, varying from about 75 to 5,000 millimicrons or perhaps even more. Another electronmicrogram ($1 \times 20,000$) of the same virus preparation is presented in figure 5. It shows essentially the same forms, though less numer-

ous and seemingly of two different densities. The same characteristic beaded or budded appearance as well recognizable in this picture. Figure 6 is an electronmicrogram ($1 \times 14,000$) of the supernatant fluid of uninoculated tissue culture medium which had been incubated for five days at 37 C. The picture shows the presence of numerous bodies of variable size and shape but none which resemble the threadlike structures observed with the two virus preparations mentioned before. Another control preparation was made by growing a strain of western equine encephalomyelitis virus in the same type of tissue culture medium as was used for the propagation of the two strains of murine poliomyelitis virus. An electronmicrogram was obtained from this preparation (titer 10^4 minimum lethal doses intracerebrally). It showed a large number of very poorly defined small spherical bodies but failed to reveal the presence of any threadlike structures.

COMMENT

The observations made in this work are presented merely to preserve an experimental record. In view of the present difficulties in properly interpreting electronmicrograms of viruses it would be premature to make any attempt to evaluate this information. In certain experiments, however, the biologic activity of murine poliomyelitis virus (SK strain) was evidently associated with the presence, in the infective material, of certain fairly well defined structures as determined by photography with the electron microscope. Since these structures occurred only in virus preparations and not in corresponding virus free control material, it

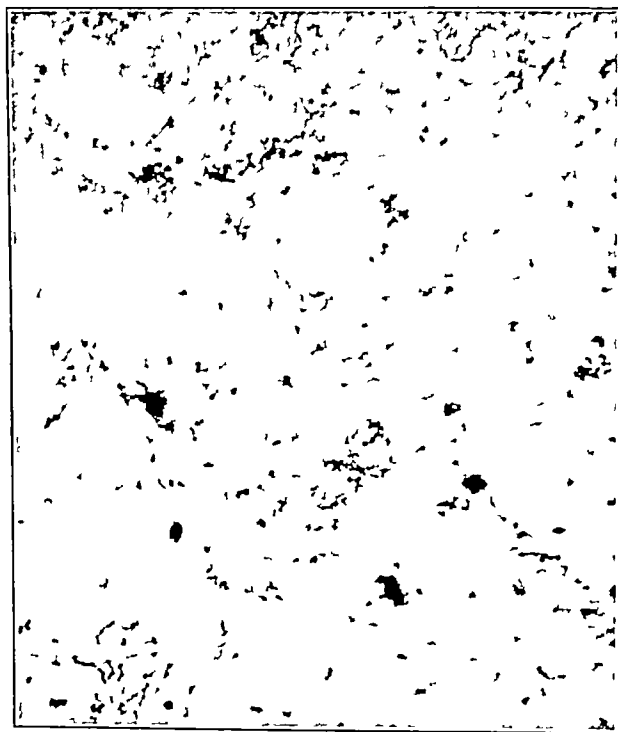


Fig 4—SK murine tissue culture virus, reduced from a photomicrograph with a magnification of 20,000 diameters.

is conceivable that we were dealing with the infectious unit itself. On the other hand, it must be pointed out that such structures could be found only in very few virus preparations out of a great many examined and that the ordinary means of identification by serologic methods were missing.

Two different types of structures were observed, first, elliptic bodies, occurring singly or in short chains, and, second, filamentous threads, which, in some instances at least, seemed to be made up of a series of such bodies held together by some cohesive material in linear association. The bodies had a diameter of

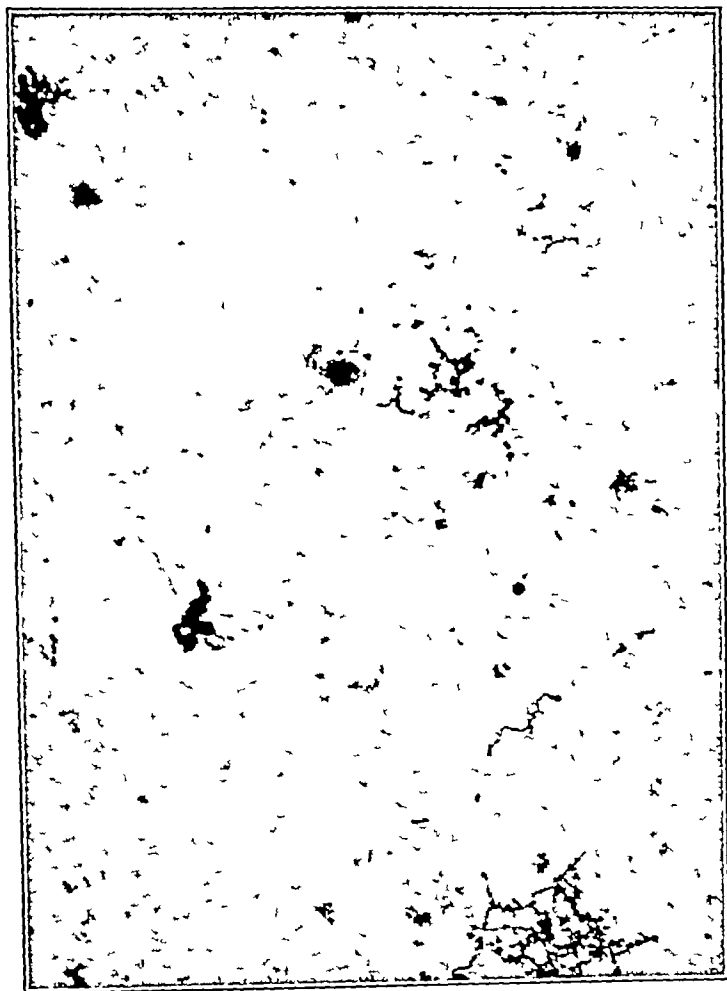


Fig 5 Virus preparation shown in figure 4, reduced from a photomicrograph with a magnification of 20,000 diameters

between 25 and 30 millimicrons. The diameter of the threads measured about 20 millimicrons while their length appeared to vary considerably from about 75 to as much as 5,000 millimicrons. The first form was observed with purified virus preparations extracted from infected mouse brains, the other with unpurified tissue culture virus preparations. It is impossible to say at present whether the two forms are in some way connected with different biologic stages of the virus or whether the difference is an artificial one, peculiar to the methods of handling the respective virus preparations. The dimensions of these structures—in one diameter at least—are appreciably larger than has previously been computed for the virus on the basis of ultrafiltrations.⁴ They correspond closely, however, with calculations derived from the sedimentation rate in the ultracentrifuge.

After this paper had been submitted for publication there became available the report of a similar investigation carried on by a group of Swedish workers (Gard, Petersen, Svedberg and Tiselius) in Uppsala.⁵ A verbal quotation (page 143, lines 4-16) from Dr. Gard's monograph of the pertinent data concerning

Theiler's virus of mouse encephalomyelitis (obtained from infected mouse brains) or of human poliomyelitis virus (obtained from spinal cords) follows:

The micrographs of murine neurovirus showed mainly long filaments, almost exclusively single fibers in a loose network with wide meshes. Now and again impurities appeared to be adsorbed to the fibers, forming bead-string-like structures. The tendency to bundle formation seemed to be less pronounced. In the human neurovirus preparations a finely dispersed substance predominated. It seemed to be rather uniform with regard to particle size and shape, forming rounded elements of about 10 millimicrons in diameter. In the bulk of this substance single fibers were embedded, sometimes branched but seldom in netlike arrangement. Bundles were never observed. A third component in the shape of rounded particles might have been present, very difficult to distinguish from aggregates of the main component.

The apparently close agreement between the two sets of observations—one dealing with natural murine and human strains, the other with a mouse adapted strain of human poliomyelitis virus—seems noteworthy.

SUMMARY AND CONCLUSIONS

1 Electronmicrograms of SK murine poliomyelitis virus, obtained either from infected mouse brains or from tissue culture preparations, were made.

2 Purified virus preparations from mouse brain showed fairly clear and uniform particles 25 to 30 millimicrons in diameter, while noninfectious control material contained only structures of ill defined morphology.



Fig 6—Supernatant fluid of un inoculated tissue culture medium which had been incubated for five days at 37° C. slightly reduced from a photomicrograph with a magnification of 14,000 diameters

3 Unpurified virus tissue culture fluid showed long threadlike structures measuring 20 by 75 to 5,000 millimicrons, which were not found in noninfectious control material.

4 The nature of the described structures at present must remain undetermined.

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⁴ Elford, W. J., Galloway, I. A. and Perdrau, J. R. The Size of the Virus of Poliomyelitis as Determined by Ultrafiltration Analysis, *J. Path. & Bact.* **40**: 135 (Jan.) 1935. Theiler, Max, and Gard, Sven. Encephalomyelitis of Mice. 1. Characteristics and Pathogenesis of the Virus, *J. Exper. Med.* **72**: 49 (July) 1940.
⁵ Gard, Sven. Purification of Poliomyelitis Virus. Experiments on Murine and Human Strains, *Acta med. Scandinav.* supp. **143**: 1-173 1943.

MEASURING EYE FLASH FROM
ARC WELDING

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In our shipyards today we are employing over 100,000 welders. These workers and their neighbors have a certain amount of exposure to ultraviolet radiation, although every effort is made to supply and use suitable eye shields, goggles and screens. About 40 per cent of the calls at our shipyard dispensaries are because the patient has received what he thinks may be an "eye flash".¹

Our purpose in the present study was to derive a practical rule whereby one can estimate in terms of time, intensity of radiation and distance the safeness of any exposure to a welding arc.

Verhoeff and Bell² showed that the ultraviolet radiations responsible for ocular lesions in rabbits were shorter than 305 millimicrons and that about 2×10^6 erg seconds per square centimeter were required for a minimal effect. They also showed that the biologic response varied with the duration of the exposure and inversely with the square root of the distance. That is, a four second exposure was twice as severe as one of two seconds, but an exposure at 4 feet was only one fourth as serious as one at 2 feet. Moreover, they found that within a twenty-four hour period the effects of repeated dosages were additive. The sources of radiation in their experiments were a mercury vapor lamp and a magnetite arc. No one, to our knowledge, has determined the exposure from a welding arc necessary to produce minimal ocular symptoms in human beings.

For our exposure studies we employed a welding machine set to operate on straight polarity at 300 amperes and 35 volts. Five-sixteenths inch Hubbard covered electrodes were used and welding was performed on a half inch thick block of iron.

In order to make our data readily applicable to operating conditions an ordinary Weston photographic light meter was calibrated in foot candles and used as a measure of dosage. The intensity of the radiations varied three or four fold from moment to moment, so that it was necessary to estimate the average intensity throughout the exposure period. The average meter reading in foot candles multiplied by the duration of exposure in minutes is used as an "exposure" coefficient or time-intensity factor. The units thus become foot candle-minutes.³

The dosage measured by the light meter is due almost entirely to the visible portion of the spectrum rather than to radiations in the ultraviolet shorter than 305 millimicrons, which are the ones known to be responsible for the deleterious ocular effects. Thus for light meter readings to be a valid index of the ocular hazard it is necessary to know whether the quantity of ultraviolet radiations bears an essentially constant ratio to

the quantity of visible radiations under various conditions encountered in welding. Through the courtesy of Drs H C Rentschler and Arthur W Ewell of the Westinghouse Lamp Company, who provided us with a tantalum photoelectric cell⁴ and click meter, we were able to measure the amount of ultraviolet radiation from arcs produced at several different amperages and by electrodes from six different manufacturers. The results of all these experiments are summarized in table 1. It will be observed from the table that there is considerable variation in output between electrodes but that the average readings of the light meter did parallel the amount of ultraviolet radiation as indicated by the number of clicks on the click meter. Moreover, the ratio of the amount of ultraviolet to visible radiation from the electrodes of various manufacturers appeared to be approximately the same. It will be noted that several of the types of electrodes tested produced somewhat greater amounts of radiant energy. Considering the variability

TABLE 1—Constancy of the Ultraviolet Visible Radiation at Various Operating Currents and for Different Makes of Electrodes

Make of Electrode	Current Setting Amperes	Num ber of Cables	Average Dosage of Foot Candles	Range	Dosage of Ultraviolet Clicks per Minute	
					Range	Range
Hubbard	300	6	300	170-450	33	15-69
Hubbard	180	5	260	250-750	25	24-30
Hubbard	100	4	100	75-112	11	
Austin Hastings	300	2	475	400-550	64	50-72
Westinghouse	300	3	375	350-400	48	40-62
Welding Engineering Sales Company	300	3	400	350-450	42	30-48
Lincoln Welding (Light)	300	2	360	350	36	30
Harvey Steel	300	3	367	300-400	33	30-36
Austin Hastings Sheet Weld	300	3	333	300-350	33	25-36

Each click of the meter represents 220 micro watt seconds per square centimeter of equivalent 2,537 angstrom radiation.

of the readings for any given make of electrode and the few tests made, we doubt whether this has any significance.

All the eyes were checked before exposure to make sure they were normal and again approximately eighteen hours after irradiation. The eyes were examined with the biomicroscope with and without fluorescein staining. Mottling of the cornea as revealed by the use of a Placido disk was found to be the most sensitive index of injury. Signs of exposures just in excess of those required to produce minimal injury were keratitis epithelialis, conjunctival and ciliary injection and, in human beings, epiphora. In none of our experiments was the dosage used sufficient to produce visible infiltration of the cornea. The chief symptoms noted by the men exposed were foreign body sensation and photophobia. To show roughly the severity of the injury a grading system of — through +++ is used in the tables which summarize the results. A ± indicates mild mottling with minimal diffuse staining. A +++ indicates a fairly definite keratitis epithelialis with conjunctival and ciliary injection and, in human beings, sensation of a foreign body.

The first experiments were performed on animals, the eyes being held open manually for the exposure

From the Howe Laboratory of Ophthalmology, Harvard Medical School (Drs. Kinsey and Cogan) and the U. S. Maritime Commission and Harvard School of Public Health (Dr. Drinker).

¹ Rieke, F. E. Arc Flash Conjunctivitis. Actinic Conjunctivitis from Electric Welding Arc. J. A. M. A. 122:734-736 (July 10) 1943.

² Verhoeff, F. H. and Bell, Louis. The Pathological Effects of Radiant Energy on the Eye. Proc. Am. Acad. Arts & Sciences 51: 630-748 1916.

³ The distance at which measurements were made makes no difference since the unit incorporates foot candles.

⁴ The upper wavelength limit of the tantalum photoelectric cell is 3,000 angstroms; the lower limit is about 2,400 angstroms and the peak of sensitivity is about 2,600 angstroms.

Ten rabbit eyes were irradiated with doses having exposure coefficients below 100 foot candle-minutes. No appreciable injurious results followed. A second group of rabbits and three dogs were then exposed. Table 2 summarizes these results. It will be seen that an exposure coefficient of 333 foot candle-minutes is required

TABLE 2—Intensity of Exposure to Welding Arc (300 Amperes) Necessary to Produce Ocular Lesions in Rabbits and Dogs

Time of Exposure, Seconds	Exposure Coefficient Foot Candle Minutes	Severity of Signs
Rabbits		
10	100	—
15	100	—
50	333	+
60	400	+
110	730	++
135	900	++
Dogs		
15	100	—
15	100	—
45	300	—
50	333	—
90	600	—
135	900	—

All exposures were at 3½ feet

to produce observable signs in rabbits and that considerably larger doses, namely an exposure coefficient of 600 foot candle-minutes was required to produce the only injury observed in dogs.

Table 3 illustrates the results on human volunteers. The subjects (young men) held the exposed eye open throughout the period of irradiation and were asked to fix on an object about 15 degrees to the side of the arc in order to avoid production of bothersome scotomas. It will be observed that an exposure coefficient of 200 foot candle-minutes is required to produce minimal ocular damage consistently in men. In actual practice this required, with one exception, a thirty second exposure at a distance of 7 feet. From the fact that a twenty second exposure (exposure coefficient 133) sometimes produced damage, we believe that approximately 150 foot candle-minutes would represent the average exposure coefficient necessary to produce minimal ocular injury in 50 per cent of the subjects. With these minimal exposures the average time at which initial symptoms were noted was eight to ten hours after the exposure.

Provided it was possible to determine total exposure time accumulated by an individual throughout a working day, repeated exposures being approximately additive during a twenty-four hour period,² it should be possible from the foregoing data to estimate the probable ocular hazard in any given welding situation by simply measuring at night the intensity with a light meter calibrated in foot candles. For example, if it is assumed that a person working near where welding is being performed might accumulate a fifteen minute exposure in the course of a day, one would predict a definite danger of ocular symptoms if the intensity at this distance from the arc was equal to 10 foot candles or more.

$$(1 \text{ e } \frac{150 \text{ foot candle minutes}}{15 \text{ minutes}} = 10 \text{ foot candles})$$

Since daylight intensities vary from about 100 foot candles to several thousand, it would be impracticable to measure changes of 10 foot candles. That is, sunlight would offer too much interference. However, if the

arc intensities are measured at night or in a dark room interference can be avoided.

Chiefly because of the uncertainty in estimating the probable time a person might be exposed, it would appear safer in practice to provide protection in the form of shields or goggles unless a safety factor of about tenfold can be allowed. Thus, after estimating the maximum time which an individual might be exposed in the course of a day, preferably by direct inspection under working conditions, an exposure coefficient of the order of 15 foot candle-minutes would seem to afford a sufficient margin of safety that the danger of ocular symptoms would be nil.

It is evident that time of exposure required to produce symptoms is not consistent with the general idea of "flash" exposures, and therefore the term appears as a misnomer. Thus there appears to be little need to provide protection for persons who will be exposed but momentarily. Moreover, since ordinary crown and flint glass are essentially impermeable to radiations shorter than 305 millimicrons, it follows that any spectacle or goggle having a thickness of 2 millimeters or more, whether colored or not, will afford practically complete protection from electric arc welding provided some shield is available to prevent lateral exposure.

Theoretically it would be possible to give these rules for safe welding in terms of distance from the arc. To do so, one must assume that arcs are constant as to intensity. If the intensity varies, as it will in changing from an arc drawing 100 amperes to one drawing 300, the distance factor would have to be altered. It is better, we believe, to measure the effect of the arc by means of the light meter, which combines the effects of distance and intensity into a single figure.

Shipyards using a single type of welding machine and a constant intensity presumably can estimate the distances which apply to their particular conditions.

TABLE 3—Intensity of Exposure to Welding Arc (300 Amperes) Necessary to Produce Ocular Lesions in Human Beings

Time of Exposure Seconds	Exposure Coefficient Foot Candle Minutes	Severity of Signs
20	133	+
20	133	—
20	133	—
20	133	—
20	133	—
20	133	—
30	200	+++
30	200	+
30	200	++
30	200	++
30	200	++
10	265	+++

All exposures were at 7 feet excepting the last one which was at 3½ feet.

SUMMARY

A light meter calibrated in foot candles was found to give an adequate, although arbitrary, measure of the dosage of radiation from electric welding arcs which produce ocular injury. The exposure to such arcs necessary to produce minimal ocular signs and symptoms in rabbits, dogs, and human beings has been measured. As to time and intensity of radiation, a minimum standard of safety for men in the neighborhood of electric welding arcs has been recommended as one-tenth that required to produce minimal ocular effects.

ACUTE VIRUS INFECTION WITH
NERVE ROOT INVOLVEMENT
SIMULATING APPENDICITISCAPTAIN WINFIELD L. BUTSCH
MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

LIEUTENANT COLONEL JAMES C. HARBERSON
MEDICAL CORPS, ARMY OF THE UNITED STATES

This report is concerned with acute pain and tenderness occurring in the right lower abdominal quadrant in 50 patients who did not have appendicitis. The admission diagnosis in all patients except 2 was acute appendicitis. This series of 50 patients were young men observed during a six month period at a station hospital. Among the early patients in the group 13 were operated on, and in each instance a normal appendix was removed. As more patients were seen and the findings pieced together the syndrome became more apparent and fewer patients were treated surgically. None of the latter patients exhibited any signs or sequelae of appendicitis in their subsequent course.

ONSET

The abrupt onset was one of the salient features of this infection. Young men who had felt perfectly well at work, playing football, sitting in a classroom or taking a walk while off duty were suddenly seized with a knife-like abdominal pain which caused many of them to double up. This pain awakened them out of a deep sleep and on one occasion struck a medical officer just as he was reaching for his alarm clock. This medical officer had undergone appendectomy some years before. His observations on himself were helpful in providing orientation.

Nausea and vomiting practically always occurred in the first few hours, which added to the suspicion of appendicitis. There was no prodromal period of malaise or lack of appetite. Often a full meal had been eaten just before the pain began. The patients did not complain of a cold preceding the onset with any more frequency than one would expect colds during the fall season of the year.

This pain struck in the right middle or lower part of the abdomen as a rule. It might also be felt in the right loin. It was localized at the onset. There was no shifting or localization of initial generalized pain as in appendicitis. If the latter type of pain occurs our treatment is immediate operation for appendicitis. Coughing or deep respiration reproduced the pain. Frequently the patient stated that the whole right side of the abdomen was sore and tender. The pain did not radiate.

A striking feature of this pain was the fact that it was always worse at night. This was true for every patient. A number of the patients were able to remain on duty for several days because the pain was lessened when they were up and about. They stated that as soon as they lay down after duty the pain became severe and grew worse through the night. It was after an uncomfortable night of pain that they sought admission to the hospital. At times the pain was extremely severe and persisted for hours, requiring morphine for relief.

Nausea and vomiting were confined to the first few hours. Only in 2 instances were these symptoms present later. The patients did not experience malaise

or a febrile sensation. Their appetite was only fair but they did eat. Urinary symptoms and diarrhea were not present.

PHYSICAL FINDINGS

The flushed face presenting a brick red appearance formed a strong impression and immediately aroused suspicion of the nature of the complaint. The brick red appearance was not limited to the malar eminences but involved the entire face. A faint generalized flush of the skin might be present. The conjunctivas were likewise heavily injected, supporting the impression that this was a systemic infection. The patient had a drowsy appearance and turned on his side to sleep when not questioned by the examiner.

The appearance of the soft palate was characteristic. It was entirely covered with a raised plaque of edematous mucous membrane of a salmon pink. On closer inspection small papular elevations with yellow centers could be seen interspersed over this area. The pharynx was not involved. The patient had no sensation of sore throat. This finding was noted in the soft palate of 48 of the 50 patients. It was less prominent when the complaint was of more than a week's duration.

The patient could always point to a definite area on the abdomen where the pain had its onset and was maximal. In 30 of the cases this was to the right of the umbilicus (area I of fig 1). The pain was felt to a lesser extent throughout the right side and in the right flank. This was also true of the tenderness. The tenderness could often be traced along the course of the tenth intercostal nerve. In eliciting the tenderness one noted that there was definite soreness in the skin. The patient flinched and voluntarily tightened the abdominal muscles the moment the skin was touched. When the patient's confidence was gained one could often palpate deeper and deeper without causing more pain. Hyperesthesia was commonly found throughout the right side of the abdomen. In 3 cases hypesthesia was noted on the right side. True muscle spasm was not found. The abdomen was noteworthy for its scaphoid appearance and laxity to gentle palpation after the first flinching of the patient was overcome.

Certain characteristics designated this pain as that of nerve root. It was reproduced in the area to the right of the umbilicus by coughing or deep breathing. Careful flexing of the neck without causing the abdominal muscles to tighten reproduced the pain in the same area in about half of the cases. Asking the patient to sit up with knees extended reproduced pain in the abdomen and in the flank simultaneously. In addition the previously mentioned nocturnal exacerbations fitted in well with this conception.

The next most common abdominal area where the pain was felt was the right lower quadrant (area II of fig 2). The maximum of pain and tenderness was found in this area in 17 patients. This area lay slightly below and nearer to the inguinal ligament than McBurney's point, though this was not striking enough to constitute a significant differential observation. Here again the fact that deeper palpation did not increase pain is of interest. The right upper quadrant as shown in area III of figure 2 was the site of maximal pain and tenderness in 3 patients.

Two of the patients were admitted with the diagnosis of acute cholecystitis. The illness of one later followed the course of a virus pneumonia and the x-ray appearance was consistent with that diagnosis. In every

patient pain and tenderness were elicited all over the right side of the abdomen but were maximal in the areas just discussed. Many of the patients referred pain to the right side of the abdomen when the left side was palpated. This finding is of interest because of the absence of acute appendicitis.

Eight patients with similar histories and physical findings were seen and not included in this group. The reason is that the pain was maximal either in the epigastrium, the left upper quadrant of the abdomen or to the left of the umbilicus and would not be confused with the pain of appendicitis. These patients showed the same clinical findings aside from the site of the pain as did the reported group. The areas in which the pain and tenderness were found are illustrated in figure 3. Undoubtedly, localization of pain in these sites was just as common as localization in the right side of the abdomen. However, circumstances prevented their coming to our attention. Patients with pain in these areas were less likely to consult their infirmary phy-

16 patients with a leukocyte count of over 10,000 and but 4 with a polymorphonuclear percentage over 75.

Lumbar punctures were done on 5 patients. No increase in spinal fluid pressure or cell count was found.

Two patients had x-ray findings consistent with a diagnosis of virus pneumonia, which rapidly cleared. In other instances in which roentgenograms of the chest were taken they showed no pulmonary involvement.

The urine was always normal.

COURSE

When these patients were first seen in the late summer and early autumn the pain was neither as severe nor as prolonged as it was later in the autumn when all respiratory diseases were more frequent and severe. At first the pain rarely lasted longer than twelve or twenty-four hours. In the late autumn and winter the average duration was from a week to ten days. One patient continued to have severe pain every night for

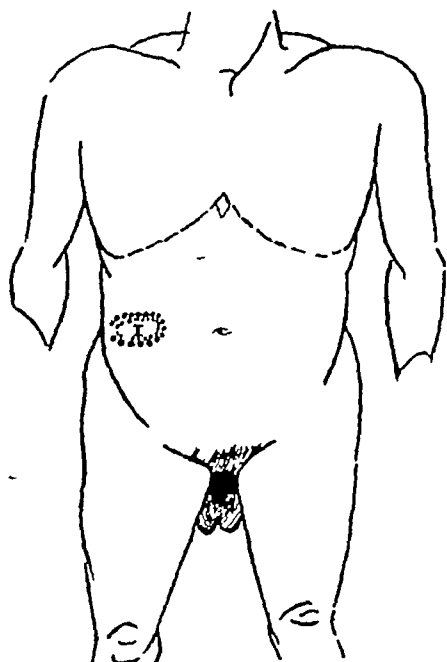


Fig. 1—Areas where pain and tenderness were most commonly found

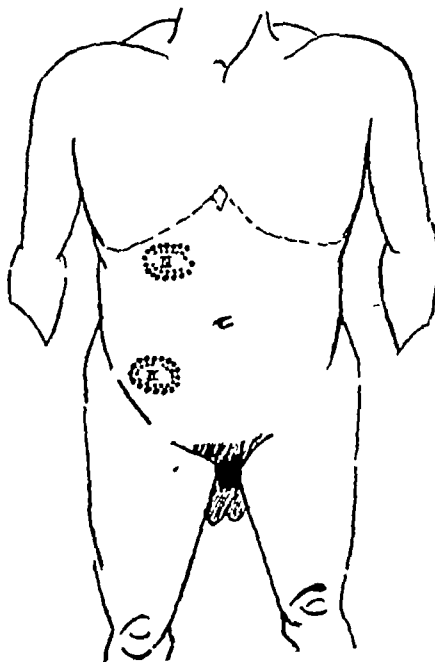


Fig. 2—Areas where pain and tenderness were next most commonly found

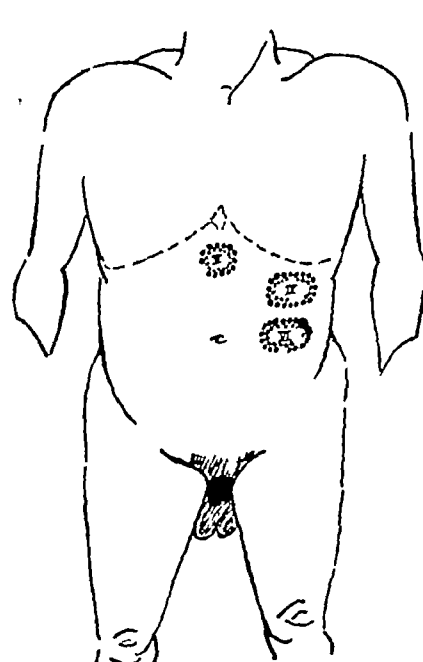


Fig. 3—Areas on left side of abdomen where pain and tenderness were found

sician. If they consulted him he was less likely to send them to the surgical ward with a diagnosis of possible appendicitis. The group we are reporting were seen for the most part in one surgical ward.

During August, September and early October these patients uniformly showed no elevation of temperature or of pulse rate. This was of value in arriving at an opinion. But as the common infections of the respiratory tract became more prominent in the late autumn they were at times combined with this syndrome. Thus a temperature as high as 102 F and a pulse rate of 100 were found because of associated rhinitis, sinusitis or tonsillitis.

LABORATORY FINDINGS

As has been stated, the temperature was usually normal or elevated only when there was associated infection of the respiratory tract. In the series there were only 12 patients with a temperature above 98.6 F and only 3 with a temperature above 100 F.

The tendency of the white blood cell count was to be normal with a normal or less than normal percentage of polymorphonuclear leukocytes. Here again mixed infection somewhat confused the picture. There were

eighteen days without relief. At this time the abdomen was explored with no abnormal findings. A normal appendix was removed.

Without exception the patients stated that they felt fairly well during the day but that they had severe pain at night while they remained in the hospital. They did not have nausea and vomiting after the onset. They were able to eat fairly well, and some were able to be up and about. They did not have elevated temperature in the hospital unless there was associated rhinitis or tonsillitis.

The nocturnal pain was sometimes severe enough to require morphine. Costovertebral nerve block was induced with procaine hydrochloride in 5 patients. Relief lasting only six to eight hours was gained from this procedure. Herpetic or other lesions of the skin were not seen.

COMMENT

We wish to emphasize that no syndrome, however well defined, which includes pain and tenderness in the right lower quadrant of the abdomen can ever be safely assumed not to be appendicitis without the most careful and repeated observations. At four and eight hour

intervals the history, physical findings and white blood cell count were rechecked until appendicitis no longer seemed to be a possibility

Early in the series many of the patients were operated on as we were becoming familiar with the syndrome and were not certain of our differential diagnosis. The abdomen was carefully explored. The appendix, the cecum and the terminal part of the ileum were found to be normal in each instance. Particular attention was given to the appearance of the glands in the mesentery of the terminal part of the ileum. They were not enlarged or inflamed in any instance. Thirteen of the 50 patients were operated on. Observation of the progress of the remaining 37 patients did not suggest appendicitis.

Four patients who previously had undergone appendectomy were admitted with this syndrome. Their pain was equally severe, and in one it lasted as long as thirteen days.

We were particularly cautious when confronted with patients who gave a history of epigastric or generalized abdominal distress which localized later in the right lower quadrant. We were also suspicious of patients with a leukocyte count over 12,000 and a polymorphonuclear percentage over 75. Despite the presence of the other features of this syndrome, an acutely diseased, suppurative appendix was removed from each of 2 patients who presented the stated findings indicative of appendicitis.

Two patients had two admissions to the hospital with this syndrome. One of these showed a definite change in symptoms twenty-four hours after the second admission. He developed nausea and vomiting during the night and in the morning and a sharply localized deep tenderness over McBurney's point. A tightly distended appendix that was beginning to show signs of redness was removed.

We realize that definite evidence that the infection was due to a virus is almost entirely lacking. The fact that we had not seen this syndrome before entering a station hospital where virus infections have been common, plus the characteristically low white blood cell count, plus the singling out of the nerve roots for involvement, plus the appearance of the soft palate have influenced us tentatively to call this a virus infection for purposes of cataloguing it.

SUMMARY

The following features of an acute infection with pain and tenderness in the right lower quadrant of the abdomen aid in distinguishing it from acute appendicitis.

- 1 Sudden, sharp onset of localized knifelike pain maximal immediately
- 2 A flushed face and a punctate erythematous edema of the soft palate suggesting a systemic infection
- 3 Pain that is worse on lying down and at night like pain of nerve root irritation
- 4 Pain intensified by coughing, flexing the neck and flexing the trunk like pain of nerve root irritation
- 5 Tenderness over the course of intercostal nerves
- 6 Absence of elevation of either the total or the polymorphonuclear leukocyte count

Two case reports are presented.

REPORT OF CASES

CASE 1—A man aged 26 entered the hospital with the history that two days previously while sitting in a classroom he suddenly suffered a severe knifelike pain in the right mid-abdomen. He had eaten a good lunch before the onset of the pain. That night he vomited once. There had been no diarrhea or urinary complaints. The pain had continued in the same area since onset. It was much worse at night. In addition the entire right side of the abdomen was sore.

The patient appeared to be in good general condition. His entire face was flushed, presenting a brick red color. The conjunctivas were injected. The mucous membrane of the soft palate was edematous and of salmon pink. There were numerous papular elevations with yellow centers throughout the palate. The pharynx was not inflamed. The abdomen had a scaphoid appearance and was soft. To the right of the umbilicus was a tender area the size of the palm of the hand. The tenderness was superficial and caused the patient to flinch and tense his abdominal muscles as soon as the skin was touched. The entire right side of the abdomen from the costal margin to the inguinal ligament was sore to the touch. The tenderness could be traced around the flank to the costovertebral angle. Palpation of the left side of the abdomen caused the pain to be referred to the right side of the abdomen. Flexing the neck caused the pain to be accentuated in the right side of the abdomen.

His temperature on admission was 99 F. The red blood cell count was 5,530,000 per cubic millimeter and the hemoglobin content 90 per cent. The white blood cell count was 8,700 per cubic millimeter with 64 per cent polymorphonuclears, 33 per cent lymphocytes, 1 per cent basophils and 2 per cent monocytes. The urine was normal.

The patient continued to have pain in the right side of the abdomen for the next seventeen days. Repeated examinations and blood counts were made. None of them were suggestive of acute appendicitis. This pain was always worse at night. X-ray examination of the kidneys, ureter and bladder showed no abnormality. The abdomen was explored. The appendix, the cecum and the terminal part of the ileum were normal. There were no enlarged lymph glands in the mesentery of the terminal part of the ileum. The appendix was removed.

The postoperative course was uneventful. The patient did not complain following the operation. He was up and about on the first postoperative day and left the hospital on the twentieth postoperative day.

CASE 2—A man aged 20 entered the hospital because of a sudden sharp pain which developed in the right lower quadrant of the abdomen twenty-four hours previously while he was on a march. During the first day of the pain it was continuous. That evening there were nausea and vomiting, and the pain became worse. The pain was still present the following morning when the patient entered the hospital.

The patient was healthy appearing. His face was a brick red and the conjunctivas were injected. The soft palate was edematous and of a salmon pink. Small papules with yellow centers were seen scattered throughout the soft palate. The pharynx was normal. The abdomen was soft and scaphoid. The maximum pain and tenderness were in an area somewhat below and nearer to the inguinal ligament than McBurney's point. The tenderness could be traced about into the loin. Flexing the neck reproduced the pain in this area. Flexing the trunk reproduced the pain both in the right loin and below McBurney's point.

The temperature on admission was 98 F. The white blood cell count was 9,100 per cubic millimeter with 65 per cent polymorphonuclears, 32 per cent lymphocytes and 2 per cent mononuclears. The results of a urinalysis were within normal limits.

After forty-eight hours stay in the hospital the pain had entirely disappeared, the flush left the face and the patient was discharged.

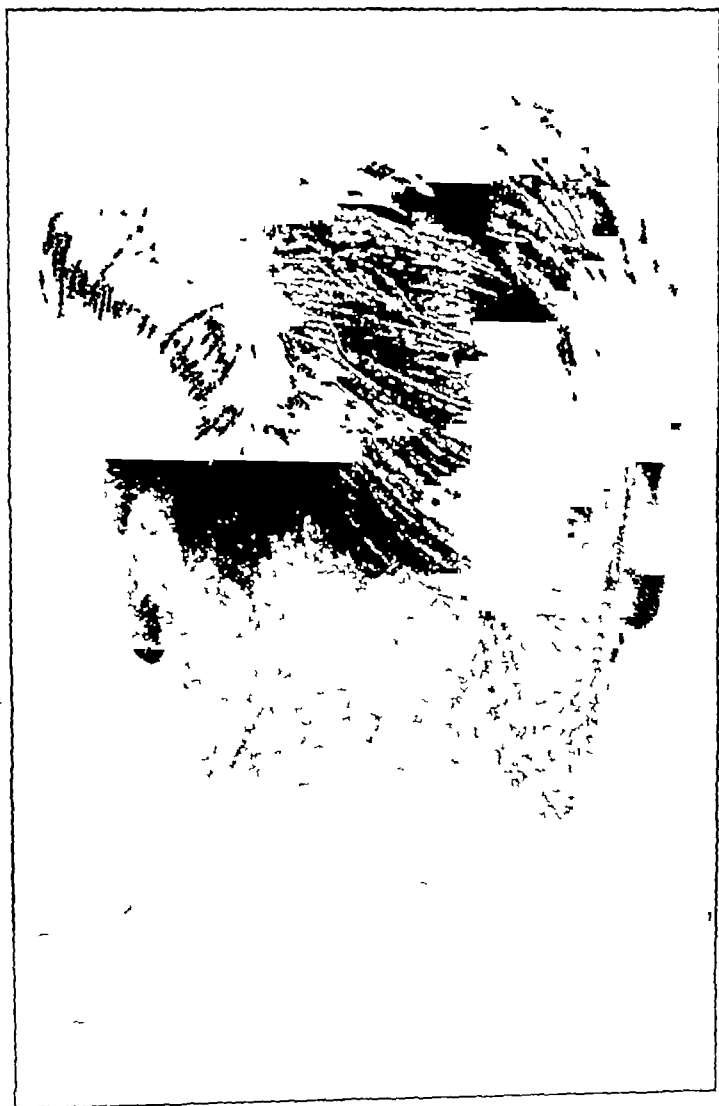
Station Hospital Camp Carson, Colorado

Clinical Notes, Suggestions and New Instruments

CONTACT DERMATITIS FROM HAIR LACQUER

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The success and beauty of the "up sweep" hair style is made possible by a quickly drying lacquer. Although this form of hair dress has been popular in the South for about five years, a sudden outbreak of dermatitis from this cause appeared only during the last month. Whether or not this is due to a change in the constituents of lacquer has not been determined. Downing¹ recorded an incidence of eczema of the ramus of the left jaw and eyelids due to nail polish. Prior to the onset of the dermatitis this patient recalled spilling a bottle of ink eradicator. After mopping up the fluid with a cloth she noted



Contact dermatitis of the ears, sides and back of the neck from hair lacquer pads

itching of the face." Two months later her hair was set and sprayed with lacquer. "That night she suffered from severe itching and redness of the sides of the face." Patch tests with the hair lacquer and ink remover elicited positive reactions. Downing concluded that the substances contacted in nail polish, ink eradicator and hair lacquer were allergenically alike. No other case of sensitivity to hair lacquer or to both nail polish and hair lacquer in the same person could be found in reports published during the past seven years.

In the private practice of Dr. Bedford Shelmire and myself, a young housewife was observed with a dermatitis of the eyelids. This eruption was a classic example of an eczematous contact dermatitis due to nail polish. The diagnosis was con-

firmed in forty-eight hours by the appearance of an erythematous plaque at the patch site where nail enamel was applied to the neck. The dermatitis cleared promptly following removal of the nail lacquer.

One month ago this patient was again seen with an acute contact dermatitis of three weeks' duration. The ears and back of the neck were pruritic, swollen and covered with fine erythematous papules. The dermatitis was said to have appeared one week after she started using hair lacquer for the first time. Contact tests were made with all of the materials used on her scalp. A negative test reaction followed the application of a soap used for shampoo, a hair rinse and hair tonic. A positive reaction was noted in twenty-four hours at the site of the contact test with Renee hair lacquer. The dermatitis cleared promptly after discontinuing its use.

This presented an interesting problem of whether the patient had developed a totally new and added sensitivity or was merely sensitive to some ingredient common to nail polish and hair lacquer, as recorded by Downing. She was rather definite about an interval of seven days between the initial spraying of lacquer on her hair and the appearance of the dermatitis. This suggested an incubation period of sensitivity to hair lacquer. Had she already been sensitive to this liquid the latent period would have been only twenty-four to forty-eight hours and certainly less than five days.

Ten women who had previously been treated for the usual eczematous contact dermatitis from nail polish and who gave positive patch reactions to nail lacquer tests were tested with hair lacquer. Five stated that they used their lacquer occasionally without resulting dermatitis. Patch tests with Renee, Admiracion and Henri Maison hair lacquer were uniformly negative. A dermatitis could not be produced in these nail polish sensitive women by applying hair lacquer directly to a recently healed site of previous nail lacquer dermatitis, as the eyelids.

A few days after observing the aforementioned patient we saw a second housewife with a healing eczematous dermatitis involving both ears, the eyelids and the back of the neck. This had appeared twenty-four hours after having sprayed lacquer on her hair. Three similar incidents had been experienced. A positive reaction followed a patch test with the Henri Maison brand of hair lacquer, which she had employed. The reaction to contact tests with Renee hair lacquer and Revlon nail polish were negative. The eruption healed promptly and she remained well after avoiding hair lacquer. Nail enamel was worn continuously by this woman during attacks of dermatitis.

Hair lacquer is applied as the last step in the coiffure. The professional beauty operator usually administers the liquid as a spray. The ears, sides, and back of the neck are frequently covered with an appreciable amount of lacquer following this procedure. Other portions of the neck and face will be contaminated unless some protective measure is taken while the spray is being used. Many women have learned to apply the lacquer to their hair with an atomizer or with the finger tips.

It is therefore easy to understand why the ears, back and sides of the neck adjoining the hair margin, eyelids and forehead are the sites most commonly sensitized by hair lacquer. A dermatitis of the arms and forearms has been seen following the habit of resting the head on an arm during sleep.

Approximately four weeks ago a new method of application with special lacquer pads was introduced in this vicinity. During the last week 9 additional cases of hair lacquer dermatitis were proved to be due to the use of these pads. Women who had employed liquid hair lacquer for several years were attracted to this manner of application because of its simplicity of use.

Following a change to the frequent appliance of Hubere lacquer pads, an incubation period of sensitivity of one to two weeks was observed before the dermatitis appeared. This incubation period was noticed in all patients who had used liquid hair lacquer for several years as well as those who had used it initially as lacquer pads. Patch test with Hubere lacquer pads, the brand employed by these patients, elicited positive reactions within twenty-four to forty-eight hours after sensitivity had developed. Patch tests to several brands of nail enamel in this group of patients sensitive to the lacquer pads were uniformly negative. Contact tests to three different brands of liquid hair lacquer were also negative in this group of patients.

¹ Downing, John G. Dermatitis Due to Ink Eradicator and Cosmetic Lacquers, Arch. Dermat. & Syph. 44: 465 (Sept.) 1941

The principal chemical components of lacquer pads are reported to be two synthetic resins, 1 per cent caustic soda and $\frac{1}{16}$ per cent ammonia

COMMENT

The sudden appearance of a large number of cases of hair lacquer dermatitis is comparable to the episode of resin finished underwear dermatitis observed some two years ago. At the time of writing 11 cases of hair lacquer dermatitis have been observed in our office. Fourteen similar cases were seen during the past two weeks by the other dermatologist in this city. This suggests that some new sensitizing material has recently been added to hair lacquer or lacquer pads. Lacquer pads were the offending agent in 23 of the 25 cases.

Most patients were found to be sensitive, on patch test, to only one brand of hair lacquer. This is contrary to the finding in nail polish dermatitis. When an individual is sensitive to one kind of nail polish he is usually allergic to all brands of nail enamel. An individual who is allergic to nail lacquer is not necessarily sensitive to hair lacquer. One example of dual sensitivity was observed.

ADDENDUM—Ten additional cases of lacquer dermatitis have been observed in our office since this paper was submitted for publication two weeks ago. Nine developed after the use of Hubère Lacquer Pads and one after Nutrine Lacquer was sprayed on the hair at a beauty parlor.

1719 Pacific Avenue

CONTACT DERMATITIS CAUSED BY HAIR
LACQUER PADS

A CHARACTERISTIC CLINICAL PICTURE

STEPHAN EPSTEIN, M.D., MARSHFIELD, WIS.

The "up-do" hair style has made it necessary to make more extensive use of lacquers than heretofore to keep the hair and locks in the desired position.

During the past few months, hair lacquer pads have been introduced. They consist of powder puffs which are soaked with some form of lacquer. Beauty parlor operators and patients tell me that the lacquer of these pads is more "gluey" than the older fluids which were usually sprayed on with an atomizer. For home use the pads provide a convenient means of application and are becoming more popular.

Recently I have seen several instances of contact dermatitis from this source. These cases presented a characteristic clinical picture. As there are—as far as I know—no reports of this form of dermatitis, it seems justifiable to call attention to its etiologic factor.

REPORT OF CASE

Mrs. T. H. and her two daughters, 4 and 6 years of age, were referred to me by their family physician on account of a puzzling symmetrical dermatitis of the face which had affected the three female members of the family about the same time. The clinical picture was strikingly similar in all three patients. The region of the ears and the adjacent areas over the parotid gland presented a more or less acute dermatitis. One of the girls exhibited considerable swelling which at first glance suggested a parotitis. On close inspection, however, the clinical picture was that of a typical contact dermatitis with redness, swelling, vesiculation and slight crusts. The mother had signs of a similar but milder eruption also on the back of her neck and on her forehead. Both she and one of the daughters had lately noticed a slight eruption on the inside of the right upper arm. During the following few days, the dermatitis of the girls spread also to the face.

Questioning revealed the cause of this somewhat perplexing eruption. The mother who had an up do coiffure all around the head had used hair lacquer pads for about a month on several occasions. On Labor Day Mrs. H. had also applied pads to the temples of both girls in order to keep their hair in shape all day long. Seven and nine days later, respectively, the dermatitis appeared on the ears and cheeks of the girls.

Patch tests which have been carried out on the three affected members were positive about forty-eight hours after the application. The test was performed by touching a small area of

normal skin three times with a lacquer pad. No tape was applied. All three patients had a negative test to finger nail polish. The hair lacquer pads used in this case were manufactured by Hubère Cosmetics, Chicago.

COMMENT

The history and clinical appearance leave no doubt as to the relationship of the hair lacquer pads to the dermatitis. The location of the dermatitis corresponded exactly to the areas to which the pads had been applied. The incubation period of seven and nine days as observed in the girls demonstrates the allergic nature of the eruption. The discovery of the exciting factor was easy in this family eruption. It may be less apparent in isolated cases such as the following. A young woman presented a slight dermatitis of the back of the neck. She had used these pads only to hold some "stragglers" in line on the back of the head. Discontinuation of the use of the pads led to complete recovery within a short time.

The reported cases show that the use of these lacquer pads may produce a rather typical clinical picture, namely a symmetrical dermatitis of the ear and parotid areas. Irritation of sites distant from the application may also occur, for example, of the arms on which the patient's head may rest while asleep. In these respects it resembles nail polish dermatitis. It is furthermore noteworthy that all three female members of the family were affected and that one single application was sufficient to provoke a dermatitis in the girls. This indicates a highly sensitizing property of the pads. With their widespread use one might expect similar cases to occur not infrequently, especially among war workers who have to apply their make-up in a hurry.

RESECTION OF THE LEFT VAGUS NERVE FOR
MULTIPLE INTRATHORACIC NEUROFIBROMAS

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AND

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Neoplasms arising from nerve tissue in the posterior mediastinum are rather common. Not infrequently neurofibromas in this location are associated with other stigmas of neurofibromatosis (von Recklinghausen's disease). The present case is in this category but was unique because the intrathoracic neurofibromas were multiple and involved both the left vagus nerve and the thoracic sympathetic nerves. Two of the tumor masses arose from and were part of the left vagus nerve, and two neoplasms, entirely separate from the others, arose from the posterior superior sympathetic chain. All the tumors were removed successfully and microscopic sections revealed that their histologic characteristics were identical. In order to remove the tumors involving the vagus, it was necessary to resect 15 cm. of the nerve and it is noteworthy that no deleterious effects were noted following the resection of the nerve itself.

REPORT OF CASE

History—A well developed white soldier aged 35 had no signs or symptoms referable to the mediastinal tumor. The lesion was discovered during a routine examination when a roentgenogram of the chest was made. The physical examination was not significant except that café au lait spots were evident in both axillas and on the chest. This finding suggested strongly that the mediastinal tumor might be a neurofibroma. X-ray films of the chest revealed widening of the posterior-superior mediastinum. The trachea was not displaced. The widening was to the left of the midline and presented itself as one homogeneous mass. There was no clue from the x-ray examination that the tumors were multiple in character since the masses were superimposed in both the frontal and lateral projections on x-ray films (fig. 1). After all diagnostic pro-

bilities had been exhausted, including a test dose of roentgen therapy, surgical exploration of the thorax was recommended.

Operation—Under intratracheal cyclopropane anesthesia an incision was made in the left posterior chest extending from the level of the fourth thoracic vertebra following the curve of the scapula and extending to the anterior axillary line (fig 2). The

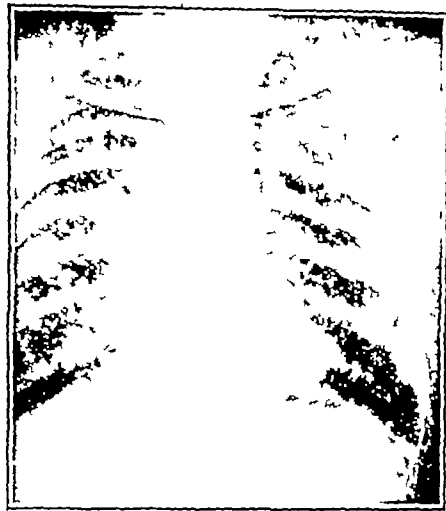


Fig 1—Homogeneous shadow in the posterior superior portion of the left thorax

underlying muscles were divided and the bony thoracic cage was exposed. The entire length of the fifth rib was resected subperiosteally and the underlying pleura opened. Rib spreading retractors were inserted and the left pleural space was exposed. The left lung was free of adhesions and there was no evidence of tumor in it. In the posterior-superior sulcus of the thorax there was a pedunculated mass about 10 cm in diameter. The tumors

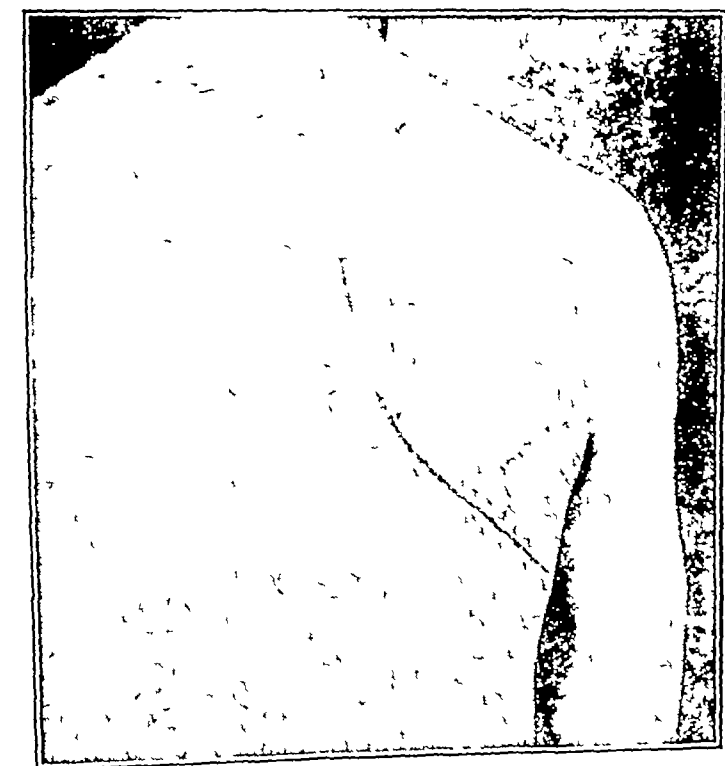


Fig 2—Incision employed for exposure of the mediastinum and left pleural cavity

were beneath the parietal pleura. The pleura was incised and the tumors were dissected free without difficulty. It was evident that the origin of the neoplasms was from the sympathetic nerve trunk. The left side of the mediastinum had a lumpy appearance, and palpation revealed two tumor masses which were lying within the mediastinum beneath the mediastinal pleura. Accordingly the mediastinal pleura was opened and two egg shaped masses, each about 5 cm in diameter, were identified and isolated. These tumors originated in the left vagus nerve and were obviously neurogenic in origin. The left recurrent laryngeal nerve was identified and saved. The

at the level of the left pulmonary hilus. The mediastinal pleura was closed, 10 Gm of sulfamidamide crystals was placed in the pleural space and the chest wall was reconstructed in layers. The wound was closed without drainage. There were no changes in respiratory rate, blood pressure or pulse noted during the resection of the segment of the vagus nerve or at any time during the operation.

Postoperative Course—This was uneventful. At no time was there evidence of shock. Pulse rate, respirations and blood pressure remained within normal limits. Three hundred cc of bloody fluid was removed from the left pleura on the second postoperative day. The patient was out of bed and entirely free from symptoms fourteen days after the operation.

A transient cervical sympathetic paralysis (Horner's syndrome) appeared as a result of manipulations of the sympathetic nerves, and paralysis of the left vocal cord became evident.

These effects were attributed to edema caused by manipulation of the nerves during the dissection. Immediately after the operation, during the routine postoperative bronchoscopic examination, the vocal cords were visualized and moved normally. Paralysis of the left vocal cord became evident on the second postoperative day, and normal function did not return for twelve weeks.

COMMENT

A case of perineural fibrosarcoma of the left vagus nerve has been reported by Furrer and Fox.¹ The lesion was discovered at postmortem examination. We have not been able

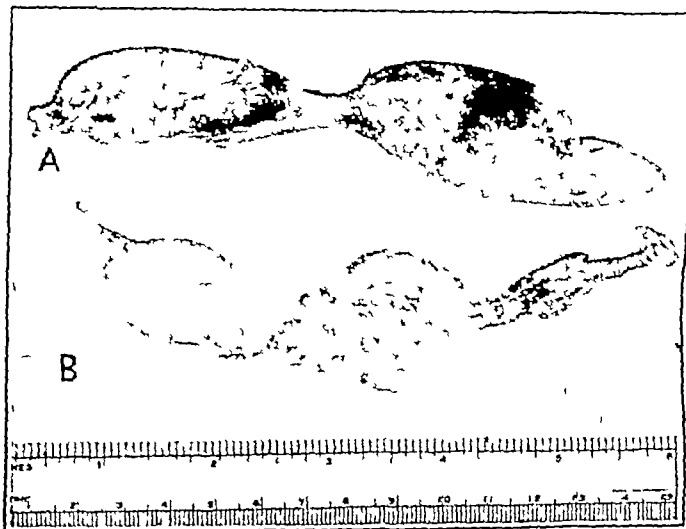


Fig 3—Tumors. A two tumors of the left vagus nerve note enlarged portion of the vagus between the two neurofibromas. B two tumors which originated in the posterior superior sympathetic nerves

to find a recorded case of a primary nerve tumor of the vagus nerve subjected to operation. The sympathetic nerves are a frequent site of origin of neurogenic tumors, but involvement of both the sympathetic and parasympathetic nerve trunks in the same patient with surgical removal has not been described.

The necessity of resecting a large part of the vagus nerve was not considered a serious handicap to the patient when the operation was performed. Since the recurrent laryngeal nerve could be saved, it was anticipated that no serious physiologic effects would be manifested after the removal of the remaining portion of the left vagus in the thorax. This proved to be the case. Experiences during the performance of total pneumonectomy, resection of the thoracic esophagus and other intrathoracic procedures where accidental or deliberate division of the vagus may occur have furnished convincing clinical evidence that the interruption of one vagus nerve in the human being is of little consequence. Moreover, it seemed logical to assume that in our case function of the left vagus had already been altered or destroyed by the two large tumors of the nerve.

It is generally recognized that primary nerve tumors of the mediastinum have a definite tendency to become malignant. There was no hesitation, therefore, to extirpate a sufficient length of the involved nerve tissue to insure complete removal of the tumors. The soldier is now on duty.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORT AUSTIN E. SMITH, M.D. Secretary

THE LOCAL USE OF SULFONAMIDE COMPOUNDS IN DERMATOLOGY

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HISTORICAL

Domagk,¹ working in the experimental laboratory of the I G Farben Industrie, Elberfeld, in 1935 reported that a compound (4-sulfamido-2',4'-diamino-benzene hydrochloric acid), which he called prontosil, acted favorably on hemolytic streptococcus infections in mice. For this he was granted the Nobel prize, which the German government denied his accepting. At the May 17, 1933 meeting of the Dusseldorf Dermatologic Society Schreus,² from his dermatologic clinic at Dusseldorf, reported that a boy aged 1½ years suffering from an apparently fatal staphylococcemia had been given 0.05 Gm of prontosil twice a day. In four days the temperature fell to normal. The medication was continued for several weeks with short intervals of rest and the boy was well. Schreus stated that the I G Farben Industrie had sent him some of the compound to try out.

Sulfanilamide had been synthesized in 1908, though nobody paid any attention to it medically for years. Schnitker³ points out that in 1909 some of the first azo dyestuffs were prepared with sulfanilamide and substituted sulfonamide groups. One of these, chrysoidin (2',4'-diamino benzene) was used in the dye industry for years. Then it was found that these dyes had a bactericidal effect in mice and it was suggested as a chemotherapeutic agent. In 1932 there was synthesized a derivative of chrysoidin in the form of a hydrochloride of 4-sulfamido-2',4'-diamino benzene. It was this derivative of chrysoidin that Domagk called prontosil and which was the original effective dye substance. It is converted into sulfanilamide in the human body. It is not used in the United States. Neoprontosil is the disodium salt of prontosil and is known also as prontosil soluble and prontosil solution. Since then many of these derivatives of the prontosils have been worked out and tried clinically, but, as Long⁴ puts it, "Knowledge concerning optimal doses and the fate of the prontosils in the human body lags behind that which is known for sulfanilamide." This compound is known as prontosil album in Germany.

In the United States the Council on Pharmacy and Chemistry early recognized the significance of the sulfonamides. And, moreover, in view of the multiplicity of these preparations and of names, the Council

attempted to exercise discretion and conservatism in accepting, under a careful system of nomenclature, those compounds which seemed to be of the greatest therapeutic value in terms of lowest toxicity. Thus was avoided the deplorable confusion in sulfonamide nomenclature such as is seen in Europe today, here in contrast the compounds are known by single names. The following compounds have thus far been accepted for N N R sulfanilamide, sulfathiazole, sulfapyridine, sulfaguanidine, sulfadiazine, succinylsulfathiazole and the sodium salts of sulfapyridine, sulfathiazole and sulfadiazine.

LOCAL USE OF SULFONAMIDES

These preparations were first used orally for the treatment of infections and it was only later that their external use was suggested. As in the case of many other potent drugs, this employment has often been abused and many times they have been tried where there was no indication for their use. Nevertheless there are certain dermatologic infections in which sulfonamides are not only helpful but definitely of value. Thus as early as 1938 Baccaredda⁵ pointed out that local applications of sulfanilamide were often more active than other methods of antisepsis. He also considered the drug well tolerated and he observed no resultant dermatitis medicamentosa. Lain⁶ in 1940 reported his experiences with sulfanilamide used locally. Sulfanilamide is soluble only to 0.8 per cent in water but much more so in glycerin and alcohol. He employed a supersaturated solution in glycerin in all cases of impetigo, acute infectious folliculitis, septic ulcers and other streptococcal and staphylococcal infections. MacKenna⁷ successfully treated impetigo and ecthyma by dusting a fine powder containing sulfapyridine on the lesions and then covering them with zinc paste and a tight dressing. Spink⁸ in reporting the successful local use of sulfathiazole in a group of staphylococcal wounds and ulcers, emphasized the necessity for debridement and the freeing of the lesions from purulent and necrotic material before making the applications. Combes and Canizares⁹ treated a few cases of impetigo with 10 per cent of sulfanilamide in olive oil and hydrous wool fat. The cases responded in four to seven days. Several chancroidal infections were cured by the use of sulfanilamide powder. Hrad¹⁰ worked with albucid (acetylsulfanilamide) and prontosil (4'-sulfamido-2',4'-diamino-azo-benzene). With ointments alone the results were good in pyoderma and impetigo. He found that bases, water soluble in type, gave better results. In certain of the cases concomitant internal use of the compound also was found helpful.

Schneiper¹¹ at Ramel's clinic at Lausanne tried various sulfonamides in impetigo, perleche, ecthyma, impetiginous eczema, secondarily infected dermatoses

5 Baccaredda A. Sull'azione dei composti sulfamidici e sulfamidici in dermatologia. *Gior. ital. di dermat. et sif.* 74: 429 (April) 1938.

6 Lain Everett S. Sulfanilamide in Glycerin in the Local Treatment for Pyoderma. *Arch. Dermat. & Syph.* 44: 257-258 (Aug.) 1940.

7 MacKenna R. M. B. Local Treatment with Sulfonamides. *Brit. M. J.* 2: 99 (July 20) 1940.

8 Spink W. W. and Paine J. R. Local Use of Sulfathiazole in Treatment of Staphylococcal Infection. *Minnesota Med.* 23: 615 (Sept.) 1940.

9 Combes F. C. and Canizares Orlando. Sulfanilamide and Allied Compounds. Their Value and Limitations in Dermatology. *Arch. Dermat. & Syph.* 4: 236-247 (Aug.) 1941.

10 Hrad O. Zur Chemotherapie eitriger Hauterkrankungen. *Wien. med. Wchnschr.* 91: 367 (May 3) 1941.

11 Schneiper A. La chimotherapie locale par les derives sulfamidés et par l'antiquet Cibazol en particulier. *Schweiz. med. Wchnschr.* 71: 222 1941.

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1 Domagk G. Ein Beitrag zur Chemotherapie der bakteriellen Infektionen. *Deutsche med. Wchnschr.* 61: 250 (Feb. 15) 1935.

2 Schreus H. T. Chemotherapie des Erysipels u. anderer Infektionen mit Irontosil. *Deutsche med. Wchnschr.* 61: 255 (Feb. 15) 1935.

3 Schnitker Maurice A. The Sulfonamide Compounds in the Treatment of Infections. Oxford University Press 1942; reprinted from Oxford Loo e Leaf Medicine pp. 25-190.

4 Long P. H. and Blise Eleanor A. The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds. New York Macmillan Company 1939.

occupational in type and retroauricular dermatitis. He used prontosil soluble in aqueous solution (disodium 4-sulfamidophenyl-2'-azo-7'-acetyl-amino-1'-hydroxy naphthalene-3',6'-disulfonate), also known as azosulfamide and prontosil red (known in France as rubiazol, the chemical formula of which Long tells us has been changed at least once), ultron (sulfamyl-dimethyl-sulfanilamide) and then sulfapyridine. With the last they had excellent results, though occasionally local intolerance developed. Then he tried sulfamidothiazole (sulfathiazole), which was better tolerated and had the advantage of the thiazole group against the staphylococcus. They treated 124 cases including secondary furunculosis, infected acne vulgaris, folliculitis, anthrax, mycoses, ulcers of the legs and psoriasiform parakeratosis. Naturally, results were not so good in the last group of cases.

Pillsbury, Wammock, Livingood and Nichols¹² treated 190 cases of infections of the skin. In 137 of them in which pyogenic infection was partially or solely the cause, results with sulfathiazole ointment in an oil in water emulsion were excellent. The authors tried sulfanilamide, sodium sulfadiazine and sulfathiazole. The last was relatively effective in staphylococcal and streptococcal infections. They mentioned the greater solubility of the sodium salts of these drugs, but also their higher pH .

Keeney, Pembroke, Chatard and Ziegler¹³ reported good results from 5 per cent of sulfathiazole in a base of hydrous wool fat and vanishing cream. They also used a 5 per cent sodium sulfathiazole ointment and noted no difference in their results. They treated 16 infected eczemas in children. In 1 case they used the compound three times a day, bringing the infection under control in forty-eight to seventy-two hours. There was no effect on the eczema. The infant was then put back on liquor carbonis detergens ointment and became reinfected. They then put the sulfathiazole in the liquor carbonis detergens ointment with good results. They also had favorable effects in infected varicose eczema, seborrheic dermatitis of the scalp and concomitant involvement of the external auditory canal. Ten children with impetigo of the face and scalp and two of the torso as well were better in forty-eight hours and cured in seven days. An adult with furunculosis of the thighs was treated with sulfathiazole ointment applied to the lesions and adjacent skin three times a day, there was no further spread, and the furuncles gradually cleared up.

The Robinsons¹⁴ found sulfathiazole ointment superior to ammoniated mercury ointment in the treatment of pyoderma, impetigo, ecthyma and paronychia. Results were not so striking in sycosis vulgaris. Two chancroidal infections responded nicely. Twenty-six patients in whom the primary condition was coccogenic responded nicely and in secondary pyogenic infection the complicating infection cleared up. The drug was of no value for dermatophytosis per se, granuloma inguinale, uncomplicated contact dermatitis and dermatitis herpetiformis.

Abramowitz¹⁵ likewise agrees that the sulfonamides are valueless in uncomplicated mycotic infections. He even feels that they should not be used in impetigo and minor infections of the skin unless ordinary measures fail.

Miller¹⁶ treated 115 cases of various skin infections with sulfanilamide, sulfathiazole, sodium sulfathiazole and sulfadiazine. The preparations, varying in strength from 5 to 50 per cent, were incorporated in two different bases, essentially water in oil emulsions. The drugs were in a suspended state, the size of the suspension approaching the colloidal state. The effects of the drug were checked by cultures on blood agar plates.

There were 45 cases of impetigo which were cured in three to ten days. In 14, white precipitate ointment and in 7 gentian violet had previously been employed. It was his custom to employ hot boric acid compresses followed by the selected ointment twice a day. The results from sulfadiazine were not as good as from sulfanilamide and sulfathiazole. In 12 cases of ecthyma cure took place within ten to twenty-five days. The results in 12 cases of sycosis vulgaris were not so gratifying. Three were cured in one month, in 1, sensitization to sulfathiazole occurred in the process. It had no effect on dermatitis repens, and 1 of 2 cases of folliculitis was cured. In secondarily infected infantile eczema, chronic recalcitrant dermatitis of the fingers, allergic eczema and mycotic infections, the infection cleared up but not the basic trouble. In epidermolysis bullosa, psoriasis, pustular acne, seborrheic dermatitis and pustular bacterid there was no result. The author advised against use of high concentrations of the drug for fear of sensitizing patients. He found that sodium sulfathiazole showed no greater efficiency and, because of its greater alkalinity, was more likely to produce irritation.

Kalz and Prinz¹⁷ think that sulfanilamide and sulfathiazole are more suitable than sulfapyridine for treatment of skin disorders because of their greater solubility. The sodium salts are soluble even up to 30 per cent but they are also very alkaline with a pH even up to 10 to 13. With ointments used in 2 to 10 per cent strength and with poor solubility of the compounds they think it must be difficult to achieve a sufficient tissue level by a concentration lower than 5 per cent in the vehicle. They do not like petrolatum as a base—it does not mix with serum and it coats the particles with a nonsoluble substance. The solubility of sulfathiazole in glycerin is ten times that in water at room temperature. Kalz and Prinz used 30 per cent of sulfanilamide and sulfathiazole suspended by emulsifying agents in glycerin. The resultant cream was miscible with water and serum. It was white, soft, with a pH between 6 and 7 and when applied to the skin formed an elastic half dry adherent coating. After some experimenting with these two compounds in 15 cases they used sulfathiazole exclusively. It was superior in its effects, the crystals of sulfanilamide were very hard, gritty and irritating. Moreover, with sulfanilamide the resultant blood level in infants was higher, which they considered unfavorable. They treated a

12 Pillsbury, D. M., Wammock, Virgenc S., Livingood, C. S. and Nichols, Anna C. The Local Treatment of Pyogenic Cutaneous Infections with Sulfathiazole in an Emulsion Base, *Am J M Sc* 202 808 (Dec) 1941.

13 Keeney, E. L., Pembroke, R. H., Chatard, F. E., and Ziegler, J. M. Sulfathiazole Ointment in the Treatment of Cutaneous Infections, *J A M A* 117 1415 (Oct 25) 1941.

14 Robinson, H. M. and Robinson, H. M. Jr. Local Use of Sulfathiazole in Dermatoses, *South M J* 34 1093 (Nov) 1941.

15 Abramowitz, E. W. The Sulfonamides in the Treatment of Various Common Skin Diseases, *Am J Pharm* 114 250 1942.

16 Miller, J. L. Use of Sulfanilamide and Its Derivatives in Ointment Form. Local Treatment of Cutaneous Diseases, *Arch Dermat & Syph* 46 379 (Sept) 1942.

17 Kalz, F. and Prinz, M. V. N. The External Use of Sulfonamides in Dermatology, *Canad M A J* 46 457 (May) 1942.

total of 130 cases with their sulfathiazole glycerin paste and, of 107 superficial infections, 99 were cured within fourteen days. The preparation was valuable in impetigo and ecthyma, cures occurring in seven days. It also was effective in infected dermatoses and dermatophytosis, later the mycotic infection could be handled with other measures, as sulfathiazole is not fungicidal. Acute cases of sycosis vulgaris reacted better than chronic ones. In infectious eczematoid dermatitis the results were doubtful.

Very recently Harris,¹⁸ in reviewing the entire subject of treatment of impetigo by the sulfonamides, has called attention to a new physical form of the sulfonamides named "microcrystalline" by Chambers¹⁹ who first prepared the microcrystals at the University of Pennsylvania. A number of the commonly used sulfonamides in this form have been prepared by the Smith, Kline and French Laboratory, Philadelphia. Harris used a 20 per cent microcrystalline sulfathiazole. A drop or two of the suspension was poured out on a small gauze dressing. The area to be treated was carefully washed with soap and water with removal of all the crusts. If necessary, the area was shaved. The gauze dressing was then applied to the area, the bit of sulfathiazole paste being placed in contact with the lesion. On removal of the dressing twenty-four hours later the impetigo was always healed. Fifteen children with a total of 293 lesions were thus treated and 290 of the 293 gave identical results. In 3 lesions treatment for another day or two was employed. In no case did a lesion recur or new areas develop. I have found these compounds to be invaluable in treating impetigo and ecthyma.

Greenblatt²⁰ reports excellent results from vaginal insufflation with sulfathiazole or sulfadiazine powder in the treatment of Trichomonas infection. He used a powder containing sulfathiazole 1 part and beta lactose 3 parts. Eight Gm of the mixture was insufflated daily for four treatments. Flagellates lost their motility in ten to fifteen hours. Blood sulfathiazole levels were not raised to dangerous levels, which is quite understandable, as 2 Gm of the drug daily would not be a large dose.

There is one local infection for which powdered sulfonamides appear to be practically a specific—chancroidal infection. Combes and Canizares used 80 per cent of sulfanilamide and 20 per cent of starch. Lepinay²¹ employs the foregoing or the pure sulfanilamide powder dusted on the ulcer alone. Many other investigators have also noted the beneficial effect not only of sulfonamides internally in chancroidal infection but also the almost miraculous effect of their local use. We thoroughly endorse the use of these compounds for Hemophilus ducreyi infection. It is the custom in the Cleveland City and University Hospital dermatology and syphilology services to cleanse the ulcers carefully and dust them with either sulfanilamide or sulfathiazole. The powder readily adheres to the open ulcer and literally seals it. In fact it is rather difficult to

remove it. Care should be exercised to put the powder on the ulcer only. It may be soaked off and replaced daily or every other day. Usually the ulcer heals within a matter of a week. If there is extensive ulceration with concomitant bubo formation, simultaneous therapy by mouth is in order.

MODE OF ACTION OF SULFONAMIDES

An editorial²² in the London *Lancet* stated that the sulfonamides had a local bacteriostatic action, further, that they occasion no interference with the healing processes of phagocytosis, leukocytic infiltration and the formation of granulation tissue even with the high local concentration of the drugs. The opinion was expressed that powdered sulfathiazole was more potent against streptococci and pneumococci and even influenced staphylococci—more than sulfanilamide and sulfapyridine. Schnitker in his careful review of the whole subject says their local use allows a high concentration to act bacteriostatically and bactericidally. Keefer²³ thinks sulfanilamide is a bacteriostatic agent. It stimulates phagocytosis. It alters organisms so that phagocytosis can take place.

On the other hand, Veal and Klepser²⁴ think the continued use of pure sulfanilamide retards the growth of granulation tissue. They state that there are no toxic reactions, that sulfanilamide, when instilled into pyogenic wounds, acts locally by inhibiting growth of certain organisms, chiefly the streptococcus, staphylococcus, colon group and Pseudomonas aeruginosa (Bacillus pyocyaneus). Bick²⁵ thinks that local applications of sulfonamide drugs to normal and soft tissues in a clean-cut operative incision in which primary suture is indicated retards healing at least 50 per cent and may promote excessive scarring. However, its use is almost obligatory in cases in which infection may be anticipated, such as in contaminated wounds under field conditions.

Hawking²⁶ showed that when 0.2 Gm of sulfanilamide was inserted into an experimental wound of the thigh in a guinea pig it was absorbed and disappeared in less than twenty-four hours. With sulfapyridine this took seven to ten days and with sulfathiazole four to five days. He also studied the absorption of sulfonamides in tubular wounds in the back of rats. Sulfanilamide will travel from the central cavity of the wound down into crevices. It will slowly penetrate into fragments of dead tissue, by local action it will not penetrate far into tissue with intact circulation. The best compound to use is sulfanilamide. It is cheaper and has a high local concentration, greater power of concentration and diffusibility. It disappears rapidly and has lower bacteriostasis. Sulfathiazole persists longer and has a higher bacteriostasis but lower concentration and diffusibility. Sulfapyridine has no advantage as compared to sulfathiazole and has the disadvantage of still lower concentration.

But how do these various sulfonamide compounds act in the clearing up of infection? Mention has already been made of their bacteriostatic and bactericidal effect.

18 Harris, T. M. Treatment of Impetigo Contagiosa with a New Physical Form of Sulfathiazole. *J. A. M. A.* **121**: 403 (Feb. 6) 1943.

19 Chambers, L. A. Harris, T. M. Schumann, Francis and Ferguson, I. K. The Use of Microcrystals of Sulfathiazole in Surgery. *J. A. M. A.* **110**: 324 (May 23) 1942.

20 Greenblatt, R. B. Sulfonamide Insufflations in the Therapy of Trichomonas Vaginalis Vaginitis. *J. M. A. Georgia* **31**: 1742 (April) 1942.

21 Lepinay. Traitement de la chancrille par la poudre de para-aminophenyl sulfanilamide ou de ses dérivés, *Bull. Soc. franç. de dermat. et syph.* **45**: 17-8 (Nov.) 1938.

22 Sulfonamides Locally. *Lancet* **1**: 92 (June 21) 1941.

23 Keefer, C. S. Sulfanilamide. Its Mode of Action and Use in Treatment of Various Infections. *New England J. Med.* **219**: 62 (Oct. 13) 1938.

24 Veal, J. R. and Klepser, R. G. The Treatment of Pyogenically Infected Wounds by the Topical Application of Powdered Sulfanilamide and Sulfanilamide Allantoin Ointment. *M. Ann. District of Columbia* **10**: 61 1941.

25 Bick, E. M. Topical Use of Sulfonamide Derivatives. *J. A. M. A.* **118**: 511 (Feb. 14) 1942.

26 Hawking, F. Local Concentrations of Sulfonamide Compounds Inserted into Wounds. *Lancet* **1**: 786 (June 21) 1941.

In 1940 Woods²⁷ reported that (1) yeast extracts contain a substance which reverses the inhibitory action of sulfanilamide on the growth of hemolytic streptococci, (2) examination of the chemical properties of this substance and its behavior in growth tests suggested that it might be chemically related to sulfanilamide, (3) p-amino benzoic acid has high activity in antagonizing sulfonamide inhibition, (4) there is strong circumstantial evidence that the yeast factor may be p-amino benzoic acid. On the basis of these results a suggestion is put forward for the possible mode of action of sulfonamides. Selbie²⁸ the same year confirmed this work and reported that the therapeutic action of sulfanilamide in mice infected with streptococci was inhibited by use of p-amino benzoic acid. He thought that the discrepancies seen in the course of work with sulfonamides can be explained as the result of variability in the amount of essential substance available in the bacterial cells or in their environment (such as the blood stream and body tissue). In 1941 Fleming²⁹ reviewed the subject, pointing out that sulfanilamide is inhibited in its action by a large number of bacteria and bacterial extracts, peptone and some chemicals of similar constitution, e g p-amino-benzoic. Pus fluid also has this inhibitory action. He showed that undiluted pus fluid plus infected blood containing sulfa-

added than will dissolve, it serves as an excellent protective dressing. This is then applied with a cotton swab or with the finger. Again, daily strips of gauze are saturated with this preparation and applied to the area to be treated. This is then followed with a coating of wax paper. Kalz and Prinz have also used a glycerin emulsion for the base of their sulfathiazole. They use a 30 per cent emulsion, which is generally considered to be too strong, most workers employing a 5 to 10 per cent preparation.

The Robinsons found no difference whether a grease or greaseless base was used with sulfathiazole. Keeney, Pembroke and their collaborators had good results with 5 per cent of sulfathiazole in a hydrous wool fat and vanishing cream base. Kalz and Prinz think ointments of petrolatum and greasy heavy bases are contraindicated, especially if there is much secretion. Petrolatum does not mix with the serum and is not penetrating. Each particle is coated with a nonsoluble substance hindering local action. Pillsbury, Wammock, Livingood and Nichols have done a lot of investigating on types of bases. They think the effective vehicle should retain the sulfonamides for a reasonable time in a finely divided state at the site. There should be close contact with the infection, the mixture should be miscible with the exudate, it should not form an impermeable and inert covering under which the bacteria grow and it should permit easy removal of the bacteria in crusts and debris. All grease bases (petrolatum, hydrous wool fat or simple ointments) may retain the medicament at the site but do not allow intimate contact of the agent with the site of infection. Moreover, they do not mix with the exudate. They sometimes are removed with difficulty and probably allow increased growth of bacteria under the film of grease. Some preparations like pectin, tragacanth and bentonite are useful but they dry out and flake off. Lotions have a limited use, and water in oil emulsions are little better. These investigators prefer oil in water emulsions in which the sulfonamide is suspended or dissolved in an aqueous phase allowing even distribution of contact between the drug and the site being treated. This results in a lower surface tension, the compound mixes readily with the exudate and is easily removed on washing. They tried sulfanilamide, sulfathiazole and sulfadiazine and found sulfathiazole relatively effective with staphylococcal and streptococcal infections. They mention the greater solubility of the sodium salts of these drugs but also their greater alkalinity. They preferred the accompanying oil in water base with sulfathiazole, which has been found to be quite satisfactory.

The employment of a "microcrystalline" form of the sulfonamides, as pointed out by Harris¹⁸ and Chambers,¹⁹ in which a drop or two of the sulfathiazole suspension on gauze is applied to an area of impetigo, is a real advance in sulfonamide therapy and is a very valuable addition to our knowledge of sulfonamide local therapy. After careful debridement, the application of these preparations to an impetigo, to an ecthyma, to an acute proven chancroidal infection will exercise remarkable effects within a matter of even forty-eight hours. Time alone can tell just which sulfonamides should be used and how much, for one of the criticisms that have more recently been leveled against sulfonamide therapy concerns the factor of sensitization of the body which at times develops after local use of the compounds.

Oil in Water Base with Sulfathiazole

	Gm. or Cc
Sulfathiazole	5 0
Sodium lauryl sulfate	1 0
Stearyl alcohol	10 0
Cetyl alcohol	3 0
Spermaceti	10 0
Glycerin	10 0
Water	61 0

pyridine 1 20,000 showed no bacteriostasis and 43 colonies of staphylococcus. If it was diluted 1 16, 32 colonies developed and in a dilution of 1 64 there was complete bacteriostasis.

The gist of all these investigations seems to indicate that in local use of the sulfonamides it is absolutely necessary that there be local cleanliness and careful debridement. Only under these conditions will the physician be able to prevent formation of the inhibiting p-amino benzoic acid and allied peptone products derived from broken down pus cells and bacteria.

HOW SHOULD THE DESIRED COMPOUND BE APPLIED LOCALLY?

The powdered drug is not used very much except for the treatment of chancroidal lesions. Pillsbury and his collaborators feel that a powder does not remain in contact with the area to be treated unless there is occlusion, that it is washed away by exudation, that there is uneven distribution. Certainly the foregoing does not hold good in the treatment of chancroidal lesions. Kalz and Prinz think the use of a powder is complicated.

Lain has used a supersaturated solution of sulfanilamide in glycerin, 4 to 8 Gm of sulfanilamide in 30 cc of slightly warm glycerin. If more of the drug is

27 Woods, D. D. Sulfanilamide Relation of p-Amino Benzoic Acid to the Mechanism of the Action, Brit J Exper Path 21 74, 1940
28 Selbie, F. R. The Inhibition of the Action of Sulfanilamide in Mice by p-Amino Benzoic Acid, Brit J Exper Path 21 91, 1940
29 Fleming, A. Proc Roy Soc Med 6 342, 1941

ABSORPTION AND BLOOD LEVELS

The object of the external use of the sulfonamides is to attain a local therapeutic concentration of the drug without subjecting the entire body to this effect. In doing this is there much danger of an excessive general absorption?

Combes and Canizares⁹ worked with sulfanilamide. Even with application of a 10 per cent ointment to the skin of the abdomen and after friction for half an hour they were unable to find traces of it in the blood stream.

Keeney, Pembroke, Chatard and Ziegler¹³ used a 5 per cent sulfathiazole ointment in six or eight infantile eczemas, applying it to one half of the body. They found sulfathiazole in the blood stream in from 2 to 3.5 mg per hundred cubic centimeters. In their cases the skin was not intact and perhaps the process was also quite diffuse. They report that Jaquette and Pillsbury (study in progress) were unable to demonstrate significant levels of sulfathiazole in 10 normal infants varying in weight from 7½ to 25 pounds (3.5 to 11 Kg). With applications of 30 Gm of ointment daily in 5 children weighing 26 to 41 pounds (12 to 18.6 Kg) they again found nothing. Kalz and Prinz¹⁷ found both sulfanilamide and sulfathiazole to be absorbed into the blood stream. The rate of absorption was highest for sulfanilamide on the broken skin. There was considerable increase of absorption if the skin was deprived of the stratum corneum. There were no dangerous blood concentrations when sulfathiazole was used. They, of course, were also working with a higher percentage of sulfonamides than most investigators, 30. Even with this high percentage of sulfathiazole in 6 cases the venous blood levels on local application only (two to twelve days) varied from 0.2 to 1.05 mg per hundred cubic centimeters. Moreover, they were employing their medicaments put up in a glycerin emulsifying base in which the solubility of the sulfonamides is higher than with ordinary bases or even so-called oil in water emulsions. Pillsbury, Wammock, Livingston and Nichols¹² also made some investigations on absorption. Most of their work was done with 5 per cent sulfathiazole in an oil in water emulsion. None of the patients showed signs of toxicity. In 4 patients they experimentally applied 180 Gm (9 Gm of sulfathiazole) of the ointment daily. In 1 of these with large areas of dermatitis a concentration of 0.05 mg per hundred cubic centimeters was found in two of twelve determinations. In the rest none was found. The Robinsons¹⁴ were also unable to find traces of the drug in the blood stream after local applications.

Apparently in using sulfonamide compounds on the skin the amount of absorption, if any, will depend on its concentration in the medicament, on the condition of the skin intact or broken, on the drug itself (thus sulfathiazole is absorbed less than sulfanilamide) and on the type of base. If one is working with sulfonamides in glycerin there will be far more absorption than from an ointment base or even from an oil in water base. Apparently, however in practically no case in which sulfathiazole has been used will there be appreciable absorption into the blood stream.

METHODS OF APPLICATION OF THE SULFONAMIDES

The method of employing the sulfonamides will depend in part on their solubility. Thus sulfanilamide is soluble only 0.8 per cent in water. Sulfathiazole

and sulfadiazine are relatively insoluble, even less than sulfanilamide. It is for this reason that some investigators have turned, to the sodium salts even though they have a high pH . Hence Fox³⁰ thinks that fluid or semifluid preparations including ointments should be prepared from the sodium salts in aqueous and not oily bases if high local drug concentrations are desired. He does admit that sodium sulfathiazole is somewhat irritating. Many of the investigators of the aforementioned compounds seem to prefer sulfathiazole, e.g. Pillsbury and his co-workers, Keeney, Pembroke, Chatard and Ziegler, the Robinsons and Kalz and Prinz.

SENSITIZATION AFTER LOCAL SULFONAMIDE THERAPY

When sulfonamides were first used externally, observers, Baccaredda notably, mentioned that there were no local reactions. As the preparations were employed more widely an occasional reaction was seen, thus the Robinsons mentioned it in 2 out of 94 cases. Schneider noted some cases of local intolerance to sulfapyridine. Pillsbury, Wammock, Livingston and Nichols saw local flareups occasionally with stearate types of base which they thought might be due to certain possible sensitizing agents, e.g. sodium lauryl sulfate rather than sulfathiazole. They were careful to point out, however, that the frequency of these reactions was not at all as common as after use of ammoniated mercury. Wiener³¹ has observed 4 cases of cutaneous hypersensitivity to sulfathiazole and sodium sulfathiazole and ointments containing these substances. The other ingredients of the ointments were found not to be factors. The dermatitis disappeared when the sulfathiazole preparation was removed. We have seen such cases. After all there are very few drugs to which an occasional patient will not be sensitive, and the physician must be constantly on guard against this contingency.

However, a different type of reaction or sensitization has more recently been reported as more experience with the sulfonamides has been gained. Sams and Capland³² treated a case of dermatitis of the external ear canal with sulfathiazole powder on two different occasions. Later the drug was administered orally and with resultant generalized erythematous macular and pustular reaction with swelling of the face and ears. In other words, the patient had become sensitized to the drug. Miller worked with various compounds in strengths of 5 to 50 per cent. One patient reacted to 50 per cent sulfathiazole ointment and later to weaker percentages. A second patient with sycosis vulgaris first was given a 50 per cent sulfathiazole ointment and later a 25 per cent strength. Two months later he was given two tablets of 0.5 Gm of sulfathiazole each by mouth and within two hours had a generalized eruption and his eyes were swollen shut. No reaction was noted in cases in which a 5 per cent ointment was employed. Miller advised against high concentrations of the drug for fear of sensitizing patients. Erskine³³ thinks that when this form of therapy is employed there will be less risk if treatment is held under six days. He too warns that

30 Fox C. L., Jr. Sodium Salts of the Sulfanilamide Compounds. *Arch. Surg.* 45: 754 (Nov.) 1942.

31 Wiener A. J. Cutaneous Hypersensitivity to Topical Application of Sulfathiazole. *J. A. M. A.* 121: 411 (Feb. 6) 1943.

32 Sams W. M. and Capland Lewis. Topical Treatment with Sulfathiazole. *Arch. Dermat. & Syph.* 14: 226 (Aug.) 1942.

33 Erskine D. Sulfonamide Sensitization. *Lancet* 2: 568 (Nov. 14) 1942.

there may be general sensitization following local therapy and resultant absorption

Livingood and Pillsbury³⁴ treated more than 1,000 cases of various dermatoses with sulfonamides and find 5 per cent sulfathiazole ointment in an oil in water emulsion base extremely effective in impetigo, ecthyma and acute impetiginous dermatitis uncomplicated by other etiologic factors. They found it less effective in eczematous lesions with a complicating chronic bacterial infection. They encountered 12 individuals who have become sensitized to sulfathiazole used locally, the sensitivity becoming manifest after later oral administration of the drug. Sensitization has been found in patients who had a localized eczema plus a complicating chronic infection or in patients with impetiginous dermatitis with eczematous tendencies. These investigators feel that local sulfathiazole therapy should not be used for prolonged periods (more than five days) since the danger of sensitizing the patient would be increased, that the indications for such therapy should be carefully considered, that local sulfathiazole therapy is highly effective when properly applied in frank superficial pyodermas (impetigo, ecthyma and acute pyococcic infections of superficial fungous disease, dermatitis or eczema). This therapy in their estimation is less effective and productive of possible later reactions in cases of chronic eczematous processes in which sensitization to various substances, including bacteria, has occurred.

Cohen, Thomas and Kolesch³⁵ cite 2 like cases of chronic varicose eczema in which a generalized dermatitis developed after the local use of 5 per cent sulfathiazole ointment. Later on the ingestion in one case of 1.0 Gm and in the other case of 0.008 Gm ($\frac{1}{8}$ gram) of the compound resulted in the production of a generalized bright red eruption. They think the topical application of sulfathiazole may produce a hypersensitivity resembling an allergic phenomenon, that it is potentially too dangerous a drug to be used indiscriminately in mild ailments and that intermittent use of the drug may produce dangerous reactions. They further think that if sulfathiazole is continued later internally, only minute doses should be given to find whether a sensitization has been produced. They wisely add that, in treating varicose eczema and ulcers, older well tried methods should be first used before sulfonamide therapy is instituted. We have only recently seen a like case of varicose eczema in which a sulfathiazole ointment had been used on the recommendation of a druggist for two weeks and later for one week. Later the patient consulted a physician who prescribed sulfathiazole internally and within a matter of hours there was a violent outbreak not only on the local lesions but over other parts of the body.

COMMENT

The sulfonamide compounds have been in use since 1933, though it is only in the past six or seven years that there has been a wide application of their benefits. Since 1938 their use in dermatology has spread extensively on the theory that, in a localized condition ame-

nable to such therapy, internal medication should not be employed when local application to the diseased site will bring the drug into intimate contact with the infection.

As a prerequisite to any therapy with these preparations, all investigators emphasize the necessity of careful preliminary debridement and cleanliness. It is necessary that the drug come into intimate contact with the organisms. Moreover, while the sulfonamides are bacteriostatic and probably under certain conditions bactericidal, yet their action is inhibited in the presence of much pus, exudation, excess of bacteria and products of decomposition of all three, hence the necessity of keeping the part to be treated free from all overhanging tissue edges, crusted areas, and so on. The work of Woods, Selbie, Fleming, Green and Parkin and others tends to show that the therapeutic effect of the sulfonamides is inhibited by p-amino benzoic acid, that pus fluid also has this inhibiting action and that decomposition products of pus cells, exudate and bacteria contain peptones and chemicals of composition similar to that of p-amino benzoic acid. Hence the physician should exercise every care to see that the medicament gets full play in close contact with the infected area.

What type of vehicle should be used for exhibiting these compounds? Unfortunately the sulfonamides are hardly soluble in water, much more so in glycerin, and Lam notably employs sulfanilamide in such a supersaturated solution on gauze, claiming excellent results. Kalz and Prinz have used a glycerin emulsion for their work. It has been clearly brought out by Pillsbury, Livingood and his co-workers, Prinz and Kalz, and others that greasy bases are unsatisfactory for applying sulfonamides locally. A grease will seal off the area, it does not mix with serum, and it may coat over the underlying infection and furnish an anaerobic pocket in which the infection may thrive. Moreover, bacteria covered with a film of grease will not be so easily reached by the medicament. Oil in water emulsion bases provide a more satisfactory medium than vanishing cream compounds and are apparently the best bases for applying any of the sulfonamides. The formula of Pillsbury and his collaborators is given in the text of this article. The powder itself may be used as in chancroidal infection but in most instances powders do not stay put and their distribution is uneven. The same also applies to lotions, and here as well there is the difficulty of very low solubility.

All the compounds beginning with sulfanilamide, have been tried in dermatology. Thus far it appears that sulfathiazole is used most widely, and with its use there is little or no general absorption. The sodium salts of the sulfonamides have also occasionally been tried locally, but most workers feel that their high pH renders them more liable to be irritating. Very recently Chambers, Harris and others have used microcrystals of sulfathiazole in impetigo and ecthyma with excellent and speedy results. This is a neutral aqueous preparation in a higher concentration coming into intimate contact with the diseased area and it has proved to be a real advance in local sulfonamide therapy. In the cases thus far tried, we have found it to be uniformly successful.

Sulfonamides have been employed in certain infections of the skin with brilliant results—impetigo, ecthyma, chancroidal infection and acute pyococcic

34 Livingood, C. S., and Pillsbury, D. M. Sulfathiazole in Eczematous Pyoderma—Sensitization Reaction to Successive Local and Oral Therapy. Report of Twelve Cases. J. A. M. A. 121: 406 (Feb. 6) 1943.

35 Cohen, M. H., Thomas, H. B., and Kolesch, A. C. Hypersensitivity Produced by the Topical Application of Sulfathiazole. J. A. M. A. 121: 408 (Feb. 6) 1943.

infections, e g in dermatophytosis Unfortunately, sulfonamides have no effect on dermatophytosis per se They have also been used in syphilis vulgaris, in many other dermatoses with secondary infection, in varicose ulcers and varicose eczema, in infectious eczematoid dermatitis complicating chronic eczema in industrial dermatoses and so on, where results occasionally have been good but often disappointing Apparently the use of these compounds should be reserved for the first four conditions mentioned and even here preferably under expert supervision Moreover, outside of chancroidal infections it is questionable whether sulfonamides should be used even here unless the lesions have not responded to other tried forms of therapy And if they are used great care should be exercised not to extend their application over five days at the most The reports of Sams and Capland, of Miller, of Cohen, Thomas and Kolesch and notably of Pillsbury and Livingood reveal that sulfonamides used locally in high concentration are more liable to sensitize the individual, that their use over a long period of time (more than five days) may likewise lead to hypersensitivity, that their use in localized eczemas and ulcerations, e g varicose ulcers with complicating chronic infections, may lead to this same situation, a situation in which even a small dose of the drug thereafter by mouth may result in a generalized allergic outbreak with edema of the face and mucous membrane and with a generalized eruption, resolving very slowly In other words, such an individual is put into a situation where sometime later in life he may be precluded from the benefits of a very valuable life saving drug, e g in a pneumonia or in a bacteremia Perhaps Chambers and Harris's stable suspension of fine crystals may help to solve the problem by their rapid action The Council on Pharmacy and Chemistry is following closely the use of sulfonamide ointments in the treatment of infections of the skin, more particularly the pyococcic infections Yet, despite their value in some instances, the available evidence of their clinical usefulness appears insufficient to justify their inclusion in New and Nonofficial Remedies On the other hand, finely divided microcrystalline sulfonamide compounds offer more promise

SUMMARY

1 Sulfonamides have a local bacteriostatic, and under some conditions probably bactericidal, action in certain infections of the skin This action is interfered with by excess pus cells, secretion, bacteria and crust formation Hence careful debridement is an essential to all sulfonamide therapy

2 Sulfonamides act particularly well locally in powder form in chancroidal infection and in an oil in water emulsion base in impetigo, in ecthyma and in acute pyococcic infections However, they should not be used in these conditions except in chancroidal infection until other measures have failed

3 In the light of present data sulfonamides should not be administered locally for more than five days because of the danger of sensitizing the individual and perhaps later precluding internal sulfonamide therapy where the situation may involve a far graver disease, e g a pneumonia or a bacteremia

4 The use of sulfonamide ointments should be limited to use directly under the care of a physician

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT
AUSTIN E SMITH M D Secretary

THE USE OF ESTROGENS IN THE TREATMENT OF PROSTATIC CARCINOMA

Relief from local symptoms of prostatic carcinoma and from metastases in soft tissues or in bone has been afforded by castration, administration of estrogens or a combination of the two methods of therapy The results are shown, not only by symptomatic improvement, but by x-ray evidence of regression of metastases and by reduction of the acid phosphatase content of blood The latter is a product of prostatic tissue metabolism To date there is reason to question the really curative value of these types of therapy, but palliation is of value even though it may not do more than prolong life and comfort for several months It is probable that the use of estrogenic materials for this purpose is safe The benefits are recognized only in cases of carcinoma arising in prostatic tissue Accordingly, the Council has adopted the following paragraph for insertion in the New and Nonofficial Remedies section "Ovaries"

'Estrogenic materials have been reported to act together with or as a substitute for castration in the palliation of the local discomforts from prostatic carcinoma and its metastases The action is apparently not curative but may persist for a number of months'

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION

AUSTIN E SMITH M D Secretary

RIBOFLAVIN (See New and Nonofficial Remedies, 1943, p 595)

The following dosage forms have been accepted

BURROUGHS WELLCOME & Co, INC, NEW YORK

Tabloid Riboflavin 1 mg

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO

Tablets Riboflavin 1 mg

SOLUTION OF EPINEPHRINE HYDROCHLORIDE 1 100 (See New and Nonofficial Remedies 1943, p 267)

The following additional dosage form has been accepted

LEDERLE LABORATORIES, INC, PEARL RIVER, N Y

Strong Solution of Epinephrine Hydrochloride 1 100 5 cc vial Preserved with 0.5 per cent chlorobutanol and 0.1 per cent sodium bisulfite

ASCORBIC ACID (See New and Nonofficial Remedies, 1943 p 600)

The following additional dosage form has been accepted

MCKESSON & ROBBINS, INC, BRIDGEPORT, CONN

Tablets Ascorbic Acid 30 mg

SODIUM DEHYDROCHOLATE (See New and Nonofficial Remedies, 1943 p 324)

The following dosage form has been accepted

GEORGE A BREON & COMPANY, INC, KANSAS CITY, MO

Ampul Solution Sodium Dehydrocholate 20% W/V 5 cc

OLEOVITAMIN A (See New and Nonofficial Remedies 1943 p 587)

The following products have been accepted

WALKER VITAMIN PRODUCTS INC MOUNT VERNON, N Y

Oleo Vitamin A Capsules Each capsule contains 25,000 U S P units of vitamin A derived from fish liver oils

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SATURDAY, OCTOBER 16, 1943

DOES THE UNITED STATES NEED A MEDICAL REVOLUTION?

THE WAGNER-MURRAY-DINGELL BILL I

The Wagner-Murray-Dingell Bill proposes a complete revolution of medical practice in the United States. Nearly every institution concerned in the prevention, diagnosis and treatment of disease would have to modify its method of rendering service. The type of medical education and research and the administration of hospitals would be grossly altered. The immediate results of revolution are almost always destructive. For several years the institutions that protect and maintain the health of the American citizens would certainly be so disrupted as to make the efficient performance of their functions for the protection of the health of the American people almost impossible.

Is our situation today so desperate as to call for so radical a remedy? Medicine never hesitates to use radical measures when required in desperate situations. Do present conditions indicate defeat in the battle against death and disease? The reverse is true, according to reliable vital statistics. Never was the general death rate lower or falling more rapidly in relation to all the conditions that affect that rate than now. The infant death rate, accepted throughout the world as the most accurate measure of public health, is lower in the United States today than in almost any other country in the world. Although this decline has continued for many years and therefore might be expected to be approaching a minimum, it has shown an accelerated fall in recent years. Life expectation is greater here than in almost any other country and definitely longer than in any having systems of compulsory sickness insurance. The recent phenomenally rapid increase in the birth rate in recent years, which has always hitherto been accompanied by an increase in maternal infant death rates, has been accompanied by a decline in these rates in the United States.

The public health movement is certainly not declining in scope or efficiency. Public health departments, which almost invariably owe their origin and protection from

the corrupting influence of politics to the activity of physicians either singly or in organizations, have now attained a momentum which is carrying their work into every community. The constant watchfulness of the medical profession has secured the administration of increasing numbers of these departments by competent trained personnel and strengthened their power to protect the public against disease.

The claim that American hospitals are in general best equipped of any in the world cannot be challenged. They are the models admired by other nations. Medical education, which at the beginning of the century was considered in many of its aspects disgraceful, has, thanks almost exclusively to the active supervision of the medical profession in the United States, attained world leadership.

These are not the conditions that call for revolutionary activity. Every phase of medical development in this country testifies to the soundness of the progress that has been made and indicates the desirability of continuing evolution.

The United States gained its leadership in medical education and care by methods that have been tested in the crucibles of time and economic hardship. Now it is proposed to abolish these institutions and methods and to substitute others whose trial in many countries has failed to produce health conditions equal to those existing here. The Wagner-Murray-Dingell Bill would abolish the volunteer control and inspiration that have brought medical education, hospital management, drug purity, research and medical service to their present eminence. As a substitute the people are offered a system controlled by salaried political bureaucrats. Scientists have too many aphorisms warning against such "ersatz" to participate in destroying what they have found good.

PREFRONTAL LOBOTOMY

Prefrontal lobotomy, surgical division of the central core of the white matter within the frontal lobes, is empirically designed to sever the connections of the frontal cortex and especially to interrupt the projections which connect the frontal regions with the thalamus and hypothalamus. The consensus is that the frontal lobes are concerned with imagination, the social sense, self consciousness and similar mental activities. While the frontal lobes are important for the psychic life of man, the concept of psychic centers similar to those for vision, for motor control of the limbs and for speech has not been established. Moniz¹ believes that certain cortical areas associated with other areas in the diencephalon and metencephalon correspond to certain psychic manifestations. Apparently loss of one frontal lobe can be functionally replaced by the activity of the other. In man one frontal lobe can be extirpated without producing psychic changes. In a case described by

¹ Moniz, Egas. Les premieres tentatives operatoires dans le traitement de certaines psychoses. *Encephale* 2: 1 (June) 1936.

Brickner² both frontal lobes were removed because of the presence of a meningioma. Psychic disturbances resulted including impairment of memory, particularly loss of memory for recent events, and loss of control of the emotions. Spurling³ states that there was no definite permanent defect produced in the intellectual status of a patient whom he studied by removing the entire right prefrontal area even though there had occurred previously partial destruction of the left prefrontal area.

In the insane there are fixed, morbid complexes to which all other activity is subordinated, these are related to cellular aggregations which appear to be fixed. Moniz proposed to treat such patients by destroying these cellular interrelations, particularly their connections with the frontal lobes.

In this country Watts and Freeman⁴ have apparently had the most extensive experience with the operation. They have reported 136 instances of bilateral prefrontal lobotomy. Anatomic studies of their patients who died some time after the operation showed that there is integrity of the cortical architecture in the frontal lobe but that degeneration occurs in the nucleus medialis dorsalis of the thalamus. They believe that this bundle is of importance in linking ideational with affective experience and that interruption of this pathway is the greatest factor in producing alteration in emotional responses of the patient. They performed the operation under local anesthesia and state that little shock was associated with it. In their experience the patient who has undergone prefrontal lobotomy is friendly, cheerful, agreeable, relaxed and interested in what goes on about him, he is always ready for the next meal and never complains of indigestion, nor does he worry about heart disease or any other malady, he sleeps soundly and without dreams, sometimes he is mentally indolent, at other times he seems oblivious to sensations of fatigue, he is a procrastinator, he likes to spend money when he has any but gets along just as well when he has none, he is able to worry, but more about externals than about himself, he is a complete extrovert. Their best results were obtained in the obsessive tension states and in the involutional depressions.

In a panel discussion⁵ held at the Cleveland session of the American Medical Association those who participated agreed that the operation produces a defect and that this defect cannot be easily tested by the ordinary formal tests of intelligence. It was also felt that demonstrations of the usefulness of the operation have

not been clarified. The editorial comment⁶ in *THE JOURNAL*, while not condemning the procedure, asserted that more scientific evidence will be required before the operation can be regarded as a worthwhile procedure.

In a recent symposium by English authors Rees⁷ stated that the operation is indicated for the relief of such symptoms as anxiety, apprehension, self mutilation, suicidal tendencies, destructiveness, attacks of violence and states of tension which may be found in many forms of psychosis or psychoneurosis. Patients best suited for prefrontal lobotomy are those with functional mental disorder who have symptoms of active conflict and have failed to respond to other methods of treatment and in whom the prospects of spontaneous recovery are remote. Knight⁸ performed prefrontal lobotomies on 30 patients with mental disorder and noted the disappearance or lessening of depression in 4 out of 7 with melancholia, improvement in conduct and behavior of the 16 remaining patients and the improved quality and output of work of 13. Among the undesirable results were loss of initiative and spontaneity, persistence of delusions or hallucinations and development of emotional lability or euphoria, retardation, irritability, aggressiveness and volubility. The more physical sequelae included loss of sphincter control, development of voracious appetite, trophic disturbances and occurrence of epileptiform fits. Fleming and McKissock⁹ reported the results of prefrontal lobotomy on 15 patients. Of the 12 patients with melancholia 7 have made complete recovery and 1 has shown considerable improvement, but the other 4 have shown little improvement. Hutton¹⁰ reported the results obtained with 50 patients subjected to prefrontal lobotomy, the mortality was 4 per cent. One patient died of cerebral hemorrhage caused by section of the anterior cerebral artery. No patient was reported as being worse after the treatment than before. Hutton emphasizes that rehabilitation after the operation is of utmost importance. Personal attention and encouragement are necessary, and when these are lacking the results tend to be disappointing. The greatest success is obtained with patients of good intelligence whose relatives have sufficient interest, affection and understanding to help in the process of reeducation. Golla¹¹ states that the lack of prevision in these patients (postoperatively) is related to the forethought necessary to appreciate the situation of the self in relation to the environment. The patients become careless because they no longer seem to appreciate their social obligations or to pay

2. Brickner R. M. *The Intellectual Functions of the Frontal Lobes. A Study Based on Observation of a Man After Partial Lobotomy*. New York: Macmillan Company, 1936.

3. Spurling R. G. *Notes on the Functional Activity of the Prefrontal Lobes*. *South M J* 27:4 (Jan.) 1934.

4. Watts J. W. and Freeman Walter. *Prefrontal Lobotomy. Six Years Experience*. *South M J* 36:478 (July) 1943.

5. Panel Discussion at Cleveland Session. *Neurosurgical Treatment of Certain Abnormal Mental States*. *J A M A* 117:517 (Aug. 16) 1941.

6. *Prefrontal Lobotomy*, editorial. *J A M A* 117:534 (Aug. 16) 1941.

7. Rees T. P. *The Indications for Prefrontal Leukotomy*. *J Ment Sc* 80:161 (April) 1943.

8. Knight G. C. *Observations on Surgical Technic*. *J Ment Sc* 80:174 (April) 1943.

9. Fleming G. W. T. H. and McKissock, Wylie. *Prefrontal Leukotomy. Further Contribution*. *Lancet* 1:361 (March 20) 1943.

10. Hutton E. L. *Results of Prefrontal Leukotomy*. *Lancet* 1:362 (March 20) 1943.

11. Golla F. L. *The Range and Technic of Prefrontal Leukotomy*. *J Ment Sc* 80:189 (April) 1943.

much attention to their relations with others. The mortality rate from the operation ranges from zero in Lyeily's¹² series of 55 cases to 22 per cent in the series of Watts and Freeman and 4 per cent in the series reported by McKissock.¹³ The most important immediate complication is cerebral hemorrhage. Epileptic convulsions as a remote sequela developed in 8 per cent of McKissock's series and in 10 per cent of Watts and Freeman's. In this series also there was 1 case of permanent hemiplegia. Watts and Freeman believe that the operation gives more permanent results than shock therapy. Strom-Olsen¹⁴ expressed the belief, on the basis of 30 personal cases, that certain disturbing "mental symptoms may be alleviated by this operation in about one half the total number treated."

Prefrontal lobotomy on the basis of the experiences here cited, would appear to be beneficial in some types of psychotic patients in whom all other methods of treatment have failed and when chances of remission or recovery are remote.

FOOD RATIONING FOR INVALIDS

Elsewhere in this issue (page 422) appears a report made by the Subcommittee on Medical Food Requirements of the Committee on Drugs and Medical Supplies of the Division of Medical Sciences of the National Research Council to the War Food Administration relative to the recommended allowances of certain types of foods for invalids in various categories. The subcommittee contains in its membership representatives of the various sections of the American Medical Association and of special societies in the field of diabetes, hospitals and similar agencies which are greatly concerned with these matters.

The regulation of the distribution of essential foods during war is one of the most difficult problems that have confronted governmental agencies. From available information it is clear that physicians in certain areas have not hesitated to recommend for certain types of disease large amounts of food substances entirely without relationship to the scientific criteria that should prevail in matters of this sort. Since the local rationing boards are, in most instances, not equipped by virtue of the knowledge of their members or in any other way to decide matters of this kind, the requests of patients accompanied by the certificates of physicians have in many instances been granted. While the total amount of food lost in this way has not been great, the damage to public morale in unwarranted dissipation of necessary food materials has been considerable.

As a part of the report of the special subcommittee there appear also two recommended forms to be used

by patients and physicians in making their needs known to the local rationing boards. No doubt the Office of Price Administration will extend the important information here supplied to the local rationing boards so that they may be guided by the advice of this authoritative group in making their allowances to invalids who may require extra amounts of important food substances. The mechanism of administration provides for appeals from the decisions of local rationing boards to regional offices and indeed from the regional offices also to the national office. In many instances regional boards have themselves established advisory bodies of physicians to aid them in making decisions on such appeals as might come to them.

Current Comment

FEDERAL FUNDS FOR RELOCATION OF PHYSICIANS

The President has transmitted to the Speaker of the House of Representatives supplemental estimates for the Public Health Service amounting to \$4,427,550. Of this sum \$2,350,000 will be used, it is proposed, for an extended program of malaria control for the United States' share of a joint Anglo-American venereal disease control program for the protection of soldiers stationed in the Caribbean area "and for the supplying by the Public Health Service, on request of state authorities, of needed medical and dental care, either by temporary financial aid or by direct employment of doctors and dentists, in certain critical areas where acute shortages have developed which cannot be met without recourse to emergency measures." The transmitted estimates, pending in the House Committee on Appropriations, contain the following proviso:

Provided, That the Surgeon General is authorized, on request of a state health department, (1) to assign medical and dental personnel of the Public Health Service to areas found to be in critical need of additional medical and dental services, such services to be furnished the public in accordance with schedules of fees approved by the state health departments and the Surgeon General of the United States, which fees shall be collected by, and used at the direction of, the state departments of health, to defray the expenses thereof incident to the rendition of such medical and dental services, the balances at the end of the fiscal year to be covered into the treasury as miscellaneous receipts, and (2) to enter into agreements with private practicing physicians and dentists under which, in consideration of the payment to them of a relocation allowance of not to exceed \$250 per month for three months and the actual cost of travel and transportation of the physician or dentist and his family and household effects to the new location, such physician or dentist will agree to move to and engage in the practice of his profession in such area for a period of not less than one year.

Strictly as a war measure, the technic proposed may be the only possible answer to the needs of certain areas in the United States which are now without medical service. The appropriation is to be used for this purpose only for the present fiscal year. Whether or not physicians can easily be found to meet this need whether or not the time has come to discard the

¹² Lyeily J. G. in discussion on Watts and Freeman.
¹³ McKissock, Wyllie. The Technic of Prefrontal Leukotomy. J. Ment. Sc. 89:194 (April) 1943.
¹⁴ Strom-Olsen, R., Last, S. L., Brody, M. B. and Knight, G. C. Results of Prefrontal Leukotomy in Thirty Cases of Mental Disorder. J. Ment. Sc. 89:165 (April) 1943.

mechanisms thus far prevailing in meeting this need, whether or not state health departments can be helpful in assuming this function, are questions which remain to be answered if the Congress makes the appropriation

INFORMATION

Under the heading of Medicine and the War in this issue of THE JOURNAL appears the announcement of a grant of funds made available by the Johnson and Johnson Research Foundation to the Division of Medical Sciences of the National Research Council to be used in collecting and disseminating information regarding advances in medical science. There is in medicine a cultural lag as there is in every other phase of human activity. The time required for the development of an important advance in the field of medicine to the moment when it becomes the property of workers in the field is, in most instances, far too long. Anywhere from a year to ten or a dozen years may elapse before a new discovery is so widely disseminated as to be generally applicable in the care of the sick. Particularly in wartime does the cultural lag become significant. Physicians actively engaged in military services are unable to devote the necessary time to the acquiring of information and to its transmission. For instance, the treatment of burns and the treatment of wounds vary not only among the armed forces of the various nations engaged in war but even among various branches of the armed forces of the same nation and also perhaps among various agencies of the Army, Navy, Air Force or similar groups. The grant made available by the Johnson and Johnson foundation will permit not only the collection and dissemination of individual reports coming from all the world regarding certain phases of medical service but also the sending of actual observers for the collection of complete information regarding any special problem of medical care of national or worldwide importance. Already many medical leaders have reflected the view that there will be in the postwar period a dissemination to the United States of conditions previously seen only in the tropics and about which American medicine is not yet fully informed. A series of reports on such conditions based on immediate first hand study will be of great service in the control of such diseases. Another project of the Committee on Information of the Division of Medical Sciences of the National Research Council is the compilation and publication of a history of medicine in this war. Through the subcommittee under the chairmanship of Dr. John F. Fulton, which has this work in charge there is being collected a vast storehouse of information becoming available throughout the world. The work has been outlined and editors, special editors and authors have been appointed for the various sections. Much of the material that will be collected under the auspices of the new grant will become available for ultimate inclusion in this important historical contribution. The contribution of the Johnson and Johnson foundation thus becomes of the greatest significance for medical progress.

RHEUMATIC FEVER IN CHILDREN

Rheumatic fever, according to the Bureau of the Census reports, is responsible for more deaths of children from 5 to 14 years of age than any other cause and accounts for a large number of deaths in older age groups as well. The appropriation of federal funds for services for crippled children under the Social Security Act of 1935 has been extended to include aid to state agencies for the development of services for children affected with rheumatic fever.¹ At present fourteen states have programs in operation for the care of children with rheumatic fever or heart disease, five others are reported intending to submit plans for rheumatic fever programs during the fiscal year of 1943, at least ten additional states have informed the Children's Bureau of their interest in such a program. The program includes education of parents in recognition of early symptoms, provision of hospital facilities and convalescent wards, public health nurses for home visiting and like measures. Accurate evaluations of the practical results of these measures have not yet appeared. If it can be demonstrated that the incidence of rheumatic fever can be reduced and the crippling effects mitigated, rapid extension of the effective features of the program should be encouraged.

EGG CULTURE METHOD IN ETIOLOGIC DIAGNOSIS OF MENINGITIS

The chick embryo is a good medium for culture of bacteria and other microbes. Blattner and his associates¹ have obtained favorable results with that medium in the diagnosis of acute meningitis. At times the older cultural methods yield negative results in meningitis even when smears of the spinal fluid reveal the presence of bacteria. The failure of bacteria to grow under these conditions may be due to the method used or to the state of the bacteria themselves. In 52 cases of acute meningitis Blattner and his associates failed to obtain bacteria in cultures on agar mediums in 8 per cent and on egg medium in only 2 per cent. Of these 52 cases 39 were due to meningococci which were obtained in culture in all but 1 case, in 3 cases blood agar culture remained sterile but the egg cultures were positive, and in 14 cases meningococci were obtained in egg cultures twenty-four to eighty-seven hours before any growth had developed on agar. Analogous results were obtained in pneumococcal and influenzal meningitis. In pneumococcal meningitis prompt isolation and typing are important in order that proper treatment may be given with the least delay. The egg method is of great value in the prompt identification of the bacterial cause in meningitis, especially when the smear of the spinal fluid reveals no bacteria or doubtful forms. That viable organisms may persist in spinal fluid, apparently sterile on the older agar mediums lends support to the continuation of chemotherapy after the apparent clinical cure of the patient.

¹ State Programs for Care of Children with Rheumatic Fever Under the Social Security Act, title 1, part 2, Children's Bureau, U. S. Department of Labor, 1943. Huse, Betty. Rheumatic Fever in Children, the Child Department of Labor, Children's Bureau, Washington, D. C. 7, 148 (May) 1943.
² Blattner, R. J., Hey, F. M. and Hartmann, A. F. Advantage of Egg Culture Technique in Infectious Disease. Arch. Path. 50, 262 (Sept.) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

FOOD RATIONING IN WARTIME

RECOMMENDATIONS OF THE NATIONAL RESEARCH COUNCIL

With the inauguration of a point system of rationing on March 1, 1943 the Office of Price Administration became the administrative agency, and the public's traditional peacetime latitude of dietary choice, limited only by ability to pay, was abruptly curtailed. As point rationing was extended to include a broad range of meats, fats and processed foods, it became evident that certain institutions and certain groups of the population would, because of special dietary needs, require special consideration. Prominent among these were hospitals and those sick individuals whose illness demands rationed foods in amounts greater than that provided by their "points." On the Food Distribution Administration of the Department of Agriculture developed responsibility for the equitable distribution of food and therefore responsibility for assuring the needs of the sick and of institutions caring for the sick.

Furthermore, it was recognized that in recent years great advances have been made in the understanding of the vital role that dietary components play in the body economy under conditions of health, stress, disease and convalescence. The role of these components can be evaluated with increasing precision in the light of modern nutritional research. Therefore in April 1943, at the request of Mr. Roy Hendrickson, director of the War Food Administration, Dr. Ross G. Harrison, chairman of the National Research Council, appointed a group of nationally known physicians to advise the War Food Administration concerning the extent of these special needs and the best method of meeting them.

Within the Division of Medical Sciences of the council this group was organized as the Subcommittee on Medical Food Requirements under the general jurisdiction of the Committee on Drugs and Medical Supplies, of which Dr. Walter W. Palmer of Columbia University is chairman. The subcommittee was composed of physicians representing various fields of medicine and consisted of Dr. William Stroud, Philadelphia, chairman, Dr. Cecil Striker, Cincinnati, Dr. Alton Ochsner, New Orleans, Dr. C. W. Munger, New York, Dr. Clark Finnerud, Chicago, Dr. Gilbert Levy, Memphis, and Dr. Walter W. Palmer (ex officio), New York. A first meeting was held in Washington on April 30 and May 1 at which the broad outlines of the problems involved were reviewed and discussed. At this and at subsequent meetings, representatives of the Civilian Food Requirements Branch, War Food Administration, and of the Food Rationing Division, Office of Price Administration, were present to acquaint the subcommittee with administrative aspects of the rationing program. Other committees of the National Research Council were called in consultation, notably the Committee on Surgery and the Subcommittee on Tuberculosis. The opinions of individual specialists in certain fields of medicine were solicited. Finally all recommendations of the subcommittee were reviewed and approved by the parent Committee on Drugs and Medical Supplies before transmission to the War Food Administration.

PRECEDENT

In the Food Rationing (Special Diets) Advisory Committee of the British Medical Research Council, the National Research Council's Subcommittee on Medical Food Requirements has had precedent. The British committee acts in an advisory capacity to the Ministry of Food, which implements its recommendations. Maximum allowances of extra rations have been formulated for a specific list of qualifying diseases. Likewise diseases and con-

ditions qualifying for priority claims on milk and eggs have been designated, and provision is made for the consideration of appeals for extra rations under circumstances not already stipulated. The British program has worked well and abuses have been minimized by requiring that the certifying physician provide strict medical evidence for most of the illnesses specified. Authority for certification of patients has been exclusively limited to licensed practitioners of medicine.

However, there are outstanding differences in the British supply position and that of the United States which have a direct bearing on food rationing in both its dietary and its administrative aspects. Great Britain depends heavily on importation of foodstuffs, the Ministry of Food owns approximately 98 per cent of the imported food supply, the nation geographically is small and cohesive, dietary habits are relatively uniform. The reverse of these factors obtains in the United States, which is primarily a food producing nation, where shortages for which no substitutes are available are unusual. The problem has been one of assuring equitable distribution and of insuring against the obtaining of more than a fair share by the less scrupulous.

GENERAL CONSIDERATIONS

The recommendations of the Subcommittee on Medical Food Requirements have been formulated in the light of present needs and restrictions. Recognition is made of the fact that poultry, fish and eggs, fresh fruits and vegetables are not at present rationed, that meats and fats are rationed together on "red points", that rationing of whole milk, in regions where it has been instituted, is imposed at the level of the producer and distributor rather than of the consumer, and that overall food supplies, though curtailed, are adequate to provide generous rather than minimal allowances. Nor should these recommendations be interpreted as representing optimal allowances, for it is recognized that in some instances they might be materially further reduced, if necessary, without jeopardizing the health of the individual. It should be clearly recognized that these recommendations represent no attempt to provide an exclusive compendium of conditions in which extra rations are thought medically indicated. They are rather a guide to the vast majority of such conditions, any attempt to define all of which would vitiate the scientifically necessary flexibility inherent in any wise system of rationing for the sick. They are susceptible of revision as changing conditions dictate.

And, finally, with these last considerations in mind, the subcommittee is fully aware of the desirability of organizing medical appeal committees composed of appropriately qualified physicians, whose duty it should be to evaluate and pass on requests for additional food allowances for patients with conditions not already specifically stipulated as qualifying them for extra rations. In some areas such appeal committees have already been established by the field offices of the Office of Price Administration. The scientific necessity for appeal boards has already eloquently been testified to by the reported experience of one such panel.¹

DURATION AND CONDITIONS OF CERTIFICATION

It is the recommendation of the subcommittee that "authority for certification of patients be restricted to persons licensed to practice medicine and surgery in their respective state."

Varying periods of validity for certification for extra rations are recommended. Where none is specified, the following

¹ The Doctor Prescribes a Diet editorial New England J. Med. 229:281 (Aug. 26) 1943.

recommendation of the Subcommittee is pertinent "Certification of patients for special food requirements should be renewed once a year and, in case of change of residence, the patients' credentials of certification should be transferrable to the local board having subsequent jurisdiction"

ADVICE ON USE OF RATION POINTS

Recognizing that many patients would benefit by and would welcome advice on how most intelligently and economically to use their ration points, the subcommittee recommended that an invitation be extended to the American Dietetic Association to assist the local ration boards in a voluntary advisory capacity. In response to this request the Diet Therapy Section of the American Dietetic Association, through its chairman, Miss Dorothea Turner, has expressed willingness to cooperate in such a capacity.

RECOMMENDATIONS

The following recommendations are for maximal allowances. Consideration, in prescribing them, should be given to the availability of unrationed foods which may, in part or in full, be substituted for dietetically equivalent rationed foods. Examples of such possible substitutions, under present rationing restrictions, are fish, poultry, eggs for rationed meats and cheese, cream and, to a lesser extent peanut butter and mayonnaise for butter and margarine, fresh for processed fruits and vegetables. The prescribing physician should bear in mind that there are other excellent sources of dietary protein, notably the legumes.

DIABETES MELLITUS

"Provisions for patients with diabetes mellitus may need to include per week not more than meat, including fish and poultry, 64 ounces, bacon 8 ounces butter or margarine, 16 ounces other fats and oils, 7 ounces, eggs 7, milk, adults, 7 pints, milk children to age 16, 7 quarts fruits and vegetables, 72 ounces. This allowance applies only to processed fruits and vegetables. It does not indicate total carbohydrate requirements. If these amounts of food are not available to the patient from the rationed foods to which he normally would be entitled together with commodities obtainable from unrationed sources, sufficient supplementary ration points should be allotted to provide them.

To be eligible to receive any supplementary allowances of rationed foods, the patient with diabetes mellitus must surrender his sugar ration."

TUBERCULOSIS

A generous allowance of processed citrus fruits and tomato juice for patients with active tuberculosis has the endorsement of the Subcommittee on Tuberculosis of the National Research Council. It is directed toward providing an ample intake of ascorbic acid and should be regarded as a maximal allowance and not a recommended optimal allowance. When fresh citrus and tomato juice are available, they are to be preferred, in view of the unsatisfactory and uncertain content of much of the processed juice. The recommendation is as follows:

"Patients with active tuberculosis should receive not more than 56 ounces of processed citrus fruit and tomato juices per week in addition to their ordinary allowance of processed fruits and vegetables and the following allowance of meats, including fish and poultry eggs, milk and fat and oils per week: meats including fish and poultry 64 ounces, eggs 7, milk 7 quarts, fats and oils including butter and margarine, 13½ ounces. If these amounts are not available from rationed foods together with unrationed food procurable by the patient sufficient supplementary points should be allotted to provide them.

CHRONIC NEPHRITIS NEPHROTIC TYPE CIRRHOSIS OF THE LIVER, SEVERE HEPATITIS AND CHRONIC ULCERATIVE COLITIS

The rationale for a high protein diet in nephrotic nephritis, cirrhosis and hepatitis may be disputed; many physicians will prefer to prescribe otherwise but there is an increasing body of scientific evidence to substantiate the following recommendation:

Patients with the nephrotic type of chronic nephritis, cirrhosis of the liver, severe hepatitis and chronic ulcerative colitis should be allowed a maximum of 7 pounds of meat (including fish and poultry) per week.

"A diagnosis of chronic ulcerative colitis should not be recognized unless certified to by three physicians and that certification must be renewed every four months and may be authorized by one physician."

CHRONIC SUPPURATIVE DISEASES

The importance of maintaining a positive nitrogen balance to favor wound healing and tissue repair has been conclusively demonstrated, likewise, that there is a large and significant loss of nitrogen in the pus from profusely draining lesions. Adequate replacement of this loss may be of critical value. In view of this subcommittee recommended that:

"Provisions for patients with chronic suppurative processes, especially empyema, osteomyelitis, extensive suppurative lesions of soft parts, subcutaneous tissues or muscle and those infections in which there is profuse pus formation, may need to include, per week, meat, including fish and poultry, 64 ounces, milk 7 quarts, eggs, 7.

"Certification of patients with chronic suppurative diseases must be renewed at sixty day intervals."

SPRUE

The sprue syndrome, including tropical and nontropical sprue and celiac disease, is characterized by faulty absorption from the gastrointestinal tract, especially of fat. Carbohydrate is better absorbed and protein is relatively well digested and absorbed. Present evidence suggests that the sprue syndrome represents a deficiency disease and that the unknown replacement factor is present in liver. The milk recommended should be skimmed. The recommendation follows:

"Patients with sprue may need up to 7 pounds of lean meat including nonfat fish and poultry and from 14 to 21 quarts of milk per week. Sufficient supplementary ration points should be allocated to provide what is required but in no case more than the maximum amount allowable.

"A diagnosis of sprue should not be recognized unless certified to by three physicians."

EVAPORATED MILK

There are many areas in the United States where fluid milk, for reasons of production, transportation or storage, is relatively unobtainable. This is especially true of certain areas in the South and Southwest. These recommendations are made with such areas especially in view. The needs of infants and children are envisioned in the first of the following group of three recommendations:

"In areas where unrationed fluid milk is not available, 1 pint of evaporated milk should be considered the equivalent of 1 quart of whole milk and should be made available in the amounts recommended to patients for whom milk is specifically indicated."

Evaporated Milk for Pregnant and Lactating Women—"In areas where unrationed fluid milk is unobtainable pregnant and lactating women should be allowed sufficient extra points to provide 1 pint of evaporated milk daily."

Evaporated Milk and Frozen Foods for Hospitals—"When hospitals are demonstrably unable to procure satisfactory substitutes in whole or in part for evaporated milk and for frozen foods in large containers allocation to them of points in amounts adequate to provide the equivalent dietetic needs of their patients should be made.

Amendment 116 of Ration Board No. 5 allows ration boards to grant necessary supplementary allowances to hospitals on request of the administrative officer."

COFFEE

At the time of writing this recommendation is academic. However the attention of the subcommittee had been called to numerous claims for extra rations of coffee on grounds of therapeutic need. All such claims were considered unjustifiable and the subcommittee recommended that coffee is not an essential dietary substance.

ADMINISTRATION

The administrative aspects of rationing as they apply to the sick and institutions caring for the sick have been of necessity considered in the formulation of recommendations. For instance

to define a hospital, for purposes of rationing, involves considerations apart from those which would dominate a definition for other legal or public health purposes. Such a definition has been formulated.

A form, simple, clear and practical, designed best to fulfil the needs of the prescribing physician, his patient and the local rationing board to which the request must be referred, is necessarily likewise an important part of the mechanisms of food distribution. A form fulfilling these requisites is suggested.

And, finally, provision for appeal such as will assure equitable consideration of the needs of the patient, the judgment of his physician and the best interests of the public welfare is inevitably a keystone in any scientifically contrived structure of rationing and food distribution for the sick.

The following are the recommendations of the Subcommittee on Medical Food Requirements for such a structure.

Definition of a Hospital—"A hospital, for purposes of rationing, may be defined as an institution which maintains and operates, in conformity with local and state laws, organized facilities for the diagnosis or care or treatment of human illness, including convalescence, and care during and after pregnancy, where persons may be admitted, under the care of a person licensed to practice medicine and surgery in the state in which the institution is located, excepting such institutions as provide exclusively for medical care over periods of less than forty-eight hours."

Form for Certification of Patients—This is presented in the accompanying tabulation.

Form to Be Executed by Patient

To Ration Board No _____, state of _____
I hereby request an extra allotment of such rationed foods as have been designated for the disease with which I am suffering namely _____

(name of disease) _____, and hereby
authorize my attending physician, _____

(name of physician)
to certify to the existence of such disease for the purpose of obtaining the designated foods.

(Signature)

(Address)

(Date)

(Number of ration book)

Form to Be Executed by Physician

I hereby certify that I have examined
that my diagnosis of his (her) condition is _____
and that he (she) has been under my care for _____ months
I further certify that he (she) needs the amount of food specified
for the disease for 2 4 6 8 10 12 months
(encircle appropriate number)

(Signature)

(Degree)

(Address)

(School of graduation)

(State and year of licensure)

(Date)

Medical Advisory Boards—"Local ration boards should be instructed to refer all requests for special dietary consideration to a Regional Medical Appeal Committee, except where such special consideration is provided for under the list of diseases specifically accorded supplementary dietary allotments."

"In regions where advisory committees have not been formed, the subcommittee recommended that the central office in Washington advise the regional board to appoint such a committee, emphasizing the importance of selecting highly qualified leading representatives of the various fields of medicine concerned with problems of nutrition, such as internal medicine, surgery, obstetrics, dermatology, pediatrics and hospital administration."

"Where such committees are already in existence, the advisability of supplementing or reorganizing them to insure qualified representation in these specialty fields was emphasized."

CONCLUSIONS

Food rationing, as it affects the sick and institutions caring for the sick, presents certain problems, scientific, social and administration. 1 It is of primary concern that the dietetic needs of the sick be assured. 2 Since extra allowances of rationed foods granted to the sick must be drawn from the total supply available for distribution to the public, strict criteria of need should determine eligibility for such extra rations, and these rations should conform in amount to scientifically established allowances. 3 Provision should be made for administration such that the best interests of patient and public are equitably served.

The Subcommittee on Medical Food Requirements of the National Research Council submits recommended allowances for patients suffering from certain diseases and suggests certain procedures for assuring the dietary needs of the sick.

NAVY

MEDICAL AND DENTAL STUDENTS APPLYING FOR NAVY ENLIST- MENT OR TRANSFER

The Bureau of Naval Personnel of the Navy Department, Washington, D. C., in Naval Officer Procurement Circular Letter No 11-43, Navy V-12 Bulletin No 98, Subject G, in a release dated September 27 in regard to medical, dental, pre-medical and predental students applying for enlistment in or transfer to V-12 program for appointment as ensigns H-V(P), gives the following information:

Apprentice seamen class V-12, U. S. Naval Reserve, who enter the Navy V-12 Program direct from civil life will be assigned to premedical or predental training on the basis of their standing in the V-12 test taken prior to enlistment. Selections will be made from among candidates who indicate at time of enlistment their preference for medical or dental training, apprentice seamen class V-12 who express such a preference and are not selected for assignment to premedical or predental training will be assigned to another curriculum in the Navy V-12 Program.

Qualified civilians between the ages of 19 and 30 who are in attendance at or accepted for the next convening class of an approved medical or accredited dental school, and who wish to complete their medical or dental education on inactive duty at their own expense should make application for appointment as

ensign H-V(P) as heretofore. Successful applicants will be appointed ensigns H-V(P) and will remain on inactive duty until satisfactory completion of the prescribed course.

Qualified civilians who are in attendance at or accepted for the next convening class of an approved medical or accredited dental school and who wish to be ordered to active duty in the Navy V-12 program should, if 17 years of age, apply for enlistment as apprentice seaman class V-12(S) or, if between the ages of 18 and 30, apply for induction as apprentice seamen class SV-12(S). If there is an appreciable lapse of time between completion of premedical or predental work and beginning of medical or dental school, students selected for medical and dental training will be placed on active duty under instruction in naval hospitals or in other naval activities as apprentice seamen during the interim. Applications for enlistment as apprentice seamen class V-12(S), and for induction and subsequent enlistment as apprentice seamen class SV-12(S), should be processed in the same manner as applications for appointment as ensign H-V(P), including form B. N. P. No 944, with the exception that officer applicant special qualification report to the Congress may be omitted for SV-12(S) and V-12(S) applicants. The forwarding endorsement should state the specific classification desired, i. e. ensign H-V(P), apprentice seamen class V-12(S) or apprentice seaman class SV-12(S).

The physical requirements for appointment as ensign H-V(P), U. S. Naval Reserve, are as specified in chapter 11 of the

Manual of the Medical Department The physical requirements for enlistment as apprentice seaman class V-12(S) or for induction into class SV-12(S) are the same as for appointment as ensign H-V(P) with the following exceptions

- Height Minimum 5 feet 4 inches
Maximum 6 feet 4 inches
- Vision 12/20 each eye correctible to 20/20
Color perception must be able to read correctly one plate of each of the following A O C color chart groups 1-4, 7-14, 17-22
- Weight In proportion to height
- Teeth Eighteen sound vital teeth, with at least two molars in functional occlusion and not more than four incisors missing which are satisfactorily replaced.

Successful applicants for enlistment in class V-12(S) will be enlisted by the director or officer in charge on authorization by the Bureau of Naval Personnel Successful applicants for induction in class SV-12(S) will be inducted in the following manner

A candidate reported by the Bureau of Naval Personnel as qualified in all respects for class SV-12(S) will be given a form letter of directed assignment by the director [enclosure (A)], this letter will be addressed to the Commanding Officer, Armed Forces Recruiting and Induction Station, stating that he is in all respects qualified and acceptable for training in the officer candidate class, class SV-12(S), U S Naval Reserve Each letter will have an expiration date not later than sixty days from date of issue On receipt of the letter of acceptability the candidate will present himself to his local selective service board and volunteer for induction If the candidate is not in a deferred classification the local selective service board will send him to an armed forces recruiting and induction station for induction

At the armed forces recruiting and induction station the candidate will present his letter of acceptability as an officer candidate to the commanding officer The candidate will then be assigned to the Navy and forwarded to the nearest navy recruiting station for induction as apprentice seaman USN-I After induction the candidate will volunteer for and be enlisted by the recruiting officer in class SV-12(S), USNR, and returned to inactive duty Recruiting officers have no responsibility for investigation of citizenship character or general acceptability, as suitable investigation of such candidates will have already been made

The same forms will be used for inducting SV-12(S) candidates as are prescribed by Recruiting Circular Letter No 6-43, for Apprentice Seamen, USN-I, and will be distributed in the same manner Recruiting stations will forward all enlistment papers to the Office of Naval Officer Procurement which originally processed the applicant The Office of Naval Officer Procurement will forward to the Bureau of Naval Personnel all enlistment papers except the health and service records The inductee will continue his education on inactive duty under the jurisdiction of the director of naval officer procurement until placed on active duty under authority from the Bureau of Naval Personnel

Applicants for apprentice seamen class V-12(S) and class SV-12(S) will be retained on or returned to inactive duty and ordered to active duty as appropriate to the next convening term at medical or dental school, to the next convening term in a V-12 unit as a premedical or predental student, or to a U S naval hospital or other naval activity on completion of required premedical or predental work pending entrance to medical or dental school Applicants who have completed their required premedical or predental work and whose induction is not completed in time to be ordered to medical or dental school should proceed to medical or dental school on inactive duty they will receive active duty orders to report on the date of commencement of the next term in medical or dental school

Civilian premedical and predental student applicants for induction and subsequent enlistment in class SV-12(S) who are married may be enlisted if in all respects qualified, but such students will not be ordered to active duty until the commencement of the term in the medical or dental school for which they have been accepted When an apprentice seaman class

V-12(S) or class SV-12(S) who entered the program unmarried is actually in attendance in a medical, dental or theological school under the Navy V-12 Program, he may marry All other apprentice seamen in the Navy V-12 Program will not be permitted to marry until commissioned or otherwise eliminated from the program

Ensigns H-V(P) who must complete one or more additional terms in order to meet the requirements for a medical or dental degree will be permitted to resign their commissions for the purpose of enlisting as apprentice seamen class V-12(S) These men may be enlisted as apprentice seamen class V-12(S) on presentation of their resignations to the director, if qualified physically or if they are able to present a waiver granted at the time of original appointment for any defects revealed in the examination which are of the same degree The bureau will consider waiving defects of greater degree or other nonorganic defects Resignation forms (in duplicate) of men found qualified physically by the directors should be forwarded to the Bureau of Naval Personnel via the Bureau of Medicine and Surgery Resignation forms of men whose reports of physical examination are forwarded for recommendation should be held until the recommendation of the Bureau of Naval Personnel is received Resignation forms (in duplicate) of men who are considered qualified for enlistment by the Bureau of Naval Personnel should then be forwarded as prescribed

The director of naval officer procurement will arrange for physical reexaminations of ensigns H-V(P) who have undergone corrective surgery or dentistry or other treatment for physical defects in order to qualify as apprentice seamen class V-12(S) If the examination indicates the corrective measures to have been successful the director of naval officer procurement is authorized to proceed with enlistment and to forward the report of physical examination to the Bureau of Naval Personnel via the Bureau of Medicine and Surgery The director of naval officer procurement is not expected to initiate the reopening of cases of ensigns H-V(P) who are rejected for enlistment in class V-12(S) because of correctible physical defects

The papers required for enlistment in class V-12(S) of former ensigns H-V(P) are as follows

- 1 Shipping Articles B N P 603, with part 2 carbon attached
- 2 Copy of pages 7, 8, 9 and 10 of Service Record B N P 952
- 3 Pension affidavit NRB form 70 (Duplicate to be retained with S R)
- 4 Service Record B N P 952
- 5 Application for Enlistment NRB Form 24A

All enlistment papers will be forwarded to the Bureau of Naval Personnel except service record, which will be retained by the appropriate director of naval officer procurement until the man concerned is ordered to active duty On enlistment of these men the director of naval officer procurement concerned will request their health records as ensigns H-V(P) from the commandants of the naval districts who have custody of them. If the commandant is unable to supply a health record on request the director of naval officer procurement may prepare one

Apprentice seamen class V-12(S) who have resigned as ensigns H-V(P) should continue their normal educational program in civilian status until their resignations have been accepted and orders to active duty have been received

Ensigns H-V(P) (medical) and apprentice seamen classes V-12(S) and SV-12(S) (medical) will on completion of the requirements for the medical degree be commissioned as lieutenant (jg) MC-V(G) U S Naval Reserve if fully qualified therefor They will then intern in civilian hospitals with which they have contracted (the Navy Department will not arrange for such internship) in an inactive duty status unless they have applied in accordance with V-12 Bulletin No 75 (subject C) and have been accepted for an internship in a Naval hospital in which case they will serve on active duty in the rank of lieutenant (jg) VC USN with the grade of acting assistant surgeon.

Ensigns H-V(P) (dental) and apprentice seamen class V-12(S) and SV-12(S) (dental) will on completion of the requirements for the dental degree be commissioned as lieutenants.

tenant (jg), DC-V(G), U S Naval Reserve, if fully qualified therefor. Those lieutenants (jg), DC-V(G), U S Naval Reserve, who have contracted for a civilian internship which has been approved by the Bureau of Medicine and Surgery will remain on inactive duty to serve such internship. Other students appointed lieutenant (jg), DC-V(G), U S Naval

Reserve will be ordered to active duty and will be afforded an opportunity to submit an application for authorization to take the next regular examination for appointment as assistant dental surgeon with the rank of lieutenant (jg), DC-V(G), U S Navy. Examinations for the Dental Corps, U S Navy, are held not more than twice a year.

MISCELLANEOUS

NEW INFORMATION PROGRAM OF NATIONAL RESEARCH COUNCIL

Dr. Ross G. Harrison, chairman of the National Research Council, has announced the acceptance by the National Academy of Sciences, National Research Council, of a grant from the Johnson and Johnson Research Foundation in the amount of \$75,000. The grant was made to enable the Division of Medical Sciences of the council, under the chairmanship of Dr. Lewis H. Weed, to gather current medical information pertaining to the war effort and to disseminate summaries. The program of the Division of Medical Sciences of the National Research Council contemplates coverage of the various medical reports and bulletins which emanate from civilian and military activities throughout the world related to the present emergency. The enterprise should fill a much needed gap in the war effort in medicine, one of the greatest difficulties encountered in medicine today is the provision of adequate up to date information to the medical officers of the armed services both in this country and abroad, also to make the experience of war medicine available as far as possible to civilian physicians. It is contemplated that a central office will be organized in Washington so that the many reports coming from various agencies may be gathered in one place. These reports will be carefully indexed and abstracted and when possible the information will be issued in published form and distributed to medical personnel.

Many of the observations and laboratory studies cannot be released today because of the classified information contained in them—information of military importance. Such materials will be carefully held until release may be made. Every effort will be made, however, to issue bulletins containing current advances in medical practice and medical research that are not military secrets but which should be made available to the medical profession at the earliest possible date. This material will form basic source material for later summaries of medical experience in the present world war. Data not only from the armed forces will be included but also from other federal agencies and from civilian enterprises.

The Johnson and Johnson Research Foundation appropriation to the National Research Council becomes immediately available, in accordance with present plans it will be utilized in the period up to June 30, 1945. A central office will be established and reporters will be appointed in various foreign countries, so that there will be a staff of special observers working under the direction of the central office in Washington.

In a global war the various theaters of operation present different medical problems in which climate, season of year, distribution of insects and distribution of disease all play different roles. Reports from different parts of the world will be of greatest medical importance, and it is hoped that out of the combined efforts much of significance will be achieved.

The informational service will be under the direction of the Committee on Information of the Division of Medical Sciences, which includes Dr. Morris Fishbein, chairman, Dr. John F. Fulton, Dr. Richard M. Hewitt and Dr. Robert N. Nye.

The Johnson and Johnson Research Foundation was established on Jan. 1, 1940 as a nonprofit philanthropic organization by Johnson & Johnson, New Brunswick, N. J., with the express purpose to devote full energy to research and development of products to serve the medical profession. It has supported both fundamental and developmental investigations and is currently sponsoring about one hundred projects. At the present time twenty-eight universities are carrying on research under grants from the foundation. The fields of medical interest which have largely been supported are pharmacology (including antiseptics), allergy and physiologic studies in pediatrics and human fertility.

CARE OF WIVES AND BABIES OF SERVICEMEN

The following announcement was made by the Office of War Information on September 29.

More than 200,000 additional wives and babies of servicemen will be able to receive maternity and infant care during the remainder of this fiscal year as a result of the additional funds which the Congress voted yesterday (Tuesday) to the Children's Bureau in a deficiency bill, Secretary of Labor Frances Perkins stated today (Wednesday).

"Servicemen and their families have reason to feel gratified and reassured that Congress has acted so promptly to replenish the funds needed to continue the maternity and infant care program, initiated last March," Miss Perkins said.

"With the additional \$18,600,000 now made available in deficiency appropriation by action of the House and the Senate within two weeks of their reconvening, there will be no interruption in this humanitarian service, which was threatened with termination through lack of funds."

"Since the first appropriation for this service made by Congress in March of this year forty-four states, the District of Columbia, Alaska and Hawaii have submitted plans for cooperation in this program to the Children's Bureau and have received approval from the bureau. Of the remaining four states, Colorado and Texas are at present working out plans, Louisiana and North Dakota have so far failed to submit plans."

"Cases of nearly 50,000 servicemen's wives and babies have been authorized for care between the time the first state, North Carolina, received approval of its plan on April 8 and September 1. At the rate at which state health departments are requesting funds, it appears that for the remaining months of this fiscal year care will be requested for 20,000 to 25,000 cases each month."

"All of us, citizens in general as well as servicemen and their families, owe a debt to the state health departments which have given devoted service, without any financial assistance from federal funds, to get this program working. A heavy burden of responsibility rests on these departments, which not only prepare basic plans of operation but carry the full administrative weight of the operation of the program within their states. The thousands of doctors who are caring for the wives and babies also deserve our enthusiastic commendation. For many of them this service imposes an extra claim on time that is already crowded. The spirit of cooperativeness and loyalty which physicians have shown has contributed in large measure to the reassurance our servicemen have a right to feel that we at home are providing adequately for the safe birth of their children."

An amendment passed with the deficiency appropriation Miss Perkins pointed out limits the program to wives and infants of enlisted men in the four lowest pay grades. Between July 1 and October 1 wives and infants of servicemen in the top three grades below commissioned officers were also covered. These are now barred.

To obtain care under this emergency maternity and infant care program a serviceman's wife selects the doctor, either a private practitioner or a clinic physician whom she wishes to provide care, and obtains from him a simple application form. Her doctor completes the application and forwards it to the state health department or other public health agency which it may designate. Both the doctor or clinic and the patient are then notified of the approval of the application. Similar application can be made when medical care is needed by the baby during the first year of life. Applications can also be obtained from the local Red Cross chapters, hospitals or local health

agencies Payment for services is made by the state health department to the doctor or clinic and to the hospital, if one is used

Complete maternity service is obtainable during the antepartum period childbirth and six weeks thereafter, including care of complications, operations, postpartum examination and medical care for the newborn baby Hospital care is paid for at ward rates whether patients are cared for in wards or other accommodations The money cannot be used to pay part of the cost of luxury accommodations

On the basis of latest reports from the states the Children's Bureau indicates the total number of cases authorized in each state from the date of approval of state plans up to September 1 as follows

Over 4,000 Illinois May 8 (date when plan was approved)

From 2,000 to 3,000 North Carolina, April 8, Michigan, May 12, Wisconsin, May 14 Indiana, May 12, Oklahoma, April 27, Kansas, May 21, Kentucky, May 8, New Jersey, April 27

From 1,000 to 2,000 Mississippi, April 19, Missouri, May 29, Minnesota, June 4, South Carolina, April 17 Arkansas, May 4, Maryland, April 9, Utah, May 8, West Virginia, April 24, Florida, June 3, Connecticut, May 14, Nebraska, June 3

Under 1,000 California, June 30 Washington, May 28, New Mexico, April 20 Ohio, August 2, Maine May 4, New York, June 30, Montana, June 3 Arizona May 8, South Dakota, May 21, District of Columbia June 22 Delaware, April 29, New Hampshire, June 8, Idaho May 24, Nevada, April 27, Wyoming April 30, Hawaii, May 31, Iowa, June 30, Virginia, July 22 Tennessee, July 21, Alaska, July 10

No record of cases yet available from these cooperating states Georgia, August 18, Massachusetts, August 30, Oregon, September 18, Pennsylvania, September 20

WARTIME GRADUATE MEDICAL MEETINGS

A three day session under the auspices of Wartime Graduate Medical Meetings will be given on October 18-19-20 in the Red Cross Building at the Station Hospital, Davis-Monthan Field, Tucson, Ariz Lectures and demonstrations will include traumatic surgery of the abdomen maxillofacial surgery, thoracic surgery anesthesia, blood plasma and blood banks neurology, neurosurgery malaria rheumatic fever, coccidiosis mycosis clinical significance of the β_{11} factor and psychiatry Among the physicians taking part are Drs Henry K Ransom, Tracy Putnam Ernest Sachs, Claude Mason and many officers of the medical corps A practically identical program was held at the station hospital at Kirtland Field Albuquerque, N M, October 13-14-15

PRIORITY RATING FOR EGGS AVAILABLE TO HOSPITALS

The U S Department of Agriculture, Washington, D C, issued a memorandum, September 27, concerning the priority rating for eggs available to hospitals While egg shortages, if they occur are likely to be local and of brief duration it is expected that egg dealers in shortage areas generally will undertake to supply hospitals voluntarily without the need of priority certificates Priority certificates however will be issued to hospitals if they have exhausted all other means of obtaining eggs Since military hospitals are assured of supplies under a different plan, only civilian hospitals will be eligible for priority certificates which will be issued by regional offices of the Food Distribution Administration Hospitals which need help in obtaining their requirement of shell eggs or which want additional information should write to the office of the Food Distribution Administration at the address nearest them

5 South Wabash Avenue Chicago
821 Market Street San Francisco
4-5 Wilson Building Dallas Texas
150 Broadway New York
700 Old Colony Building Des Moines Iowa
1516 Welton Street Denver
Western Union Building Atlanta Ga

AIR EVACUATION OF WOUNDED

United States and Canadian officers met recently in Canada and in Washington, D C, to discuss allied interest in air evacuation of ill and wounded men Air Commodore J W Tice, director of medical service for the Royal Canadian Air Force, Lieut Col Richard L Meiling, Office of the Air Surgeon, Army Air Forces Headquarters, and Lieut Col R T Stevenson, commandant of the School of Air Evacuation at Bowman Field, Kentucky, participated Commodore Tice and Brigadier B Chisholm, director general of the Medical Service of the Royal Canadian Army, recently returned the visit by calling on Brig Gen David N W Grant in the Air Surgeon's office in Washington The Royal Canadian Air Force is developing an air evacuation school similar to the one at Bowman Field, Kentucky The officers are coordinating air evacuation wherever United States, Canadian and British troops are fighting

PUBLIC HEALTH UNDER HITLER

Paris-Midi (North Zone) of June 22 asks whether the precipitous rise in prices of objects of primary necessity is justified An ordinary household broom now costs 300 francs instead of 50 francs In a big store a cup and saucer of ugly earthenware cost 70 francs, a simple bowl 35 to 40 francs and a glass tumbler 25 francs The former prices were respectively 6 10 and 2 francs The cheapest toothbrush costs 82 francs instead of 8, and the shop girl whispers that it is the last to be had This is alarming It is always the last packet of cigarets, the last kilogram of sugar, the last pair of trousers or the last beefsteak before the new rise in prices A packet of cigarets will then cost 140 francs and a toothbrush 110 francs A luxury toothbrush costs 350 francs in a small shop near the Saint-Lazare station A brush for cleaning the kitchen tiles costs 80 francs The last piece of chamox leather costs 500 francs A marketing bag of waxed canvas formerly costing 38 francs, cannot now be found for 175 francs Writing paper is so dear that one love letter costs 7 or 8 francs The street hawk's price is no better, as he sells stationary for 10 francs instead of the former 1 franc A comb worth 3 francs now costs 30 francs In a chain store a pullover of mixed wool and cotton costs 570 francs At a furniture dealer's a small white stool costs 80 francs instead of the prewar 10 francs A quite ordinary scarf at a shop on the boulevard Clichy is priced at 1,500 francs, or the monthly salary of a stenographer A small haberdasher asked 7,000 francs for a dressing gown of artificial silk In the windows of a big shop a kitchen suite consisting of five pieces of furniture of white wood was marked at 11,027 francs

Social Demokraten of July 14 reports from a private source coming from Berne that in Marseilles pregnant women are barely allowed half the prescribed rations Newborn babies in Paris weigh less than 3 Kg According to Professor Richey more than 10 million French people are suffering from undernourishment These and millions more, already in bad health will be in great danger owing to their lack of resistance to epidemics of tuberculosis typhus skin diseases and scabies It is expected that the famine in France will be as severe as in Greece

According to DNB of June 30 it has become necessary to point out that oils for technical purposes of all kinds must not be used for the manufacture of food or for cooking They are a serious danger to health Even the consumption of small quantities of fat mixtures containing technical oils may have serious consequences Therefore people must be warned urgently not to use technical oils to prepare food or even to grease baking tins

Le Petit Parisien (North Zone July 12) states that there are no strawberries or cherries available in Paris but wild strawberries and other luxurious fruit can be found at very high prices The newspaper deplors that only people who can pay 150 to 200 francs for a kilogram of strawberries or 30 to 40 francs for one peach can eat fruit

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

CONNECTICUT

Canada Sends Groups to Yale for Training in Health Education—Five brothers and two fathers, members of religious orders, will receive one year's training in health education and public health at Yale University School of Medicine, New Haven, under a cooperative program with six teaching orders with Dr Jules A. Gilbert, Granby, Que., director of public health education, and with the financial assistance of the ministry of health, Quebec. On their return to Quebec the seven will devote themselves primarily to school health education work in the normal schools of their respective orders, in cooperation with the ministry of health.

Memorial Room to Dr Trask—A memorial room in the Yale University School of Medicine, New Haven dedicated to the memory of the late Dr James D. Trask, has been completed and is now in use for lectures and seminars by the department of pediatrics. Dr Trask, who graduated from the Sheffield Scientific School in 1913 and was associate professor of pediatrics at Yale, died on May 24, 1942 while serving as consultant to the Secretary of War in the investigation of epidemic diseases in the Army. According to the *New York Times* the decorating and furnishing of the memorial room were made possible by funds contributed by medical students, by alumni of the pediatric service of the New Haven Hospital and by other friends and associates of Dr Trask.

DISTRICT OF COLUMBIA

Hospital News—A new 50 bed addition to the venereal disease hospital at Gallinger Municipal Hospital, Washington, was to be available by October 1, under the direction of Sidney Olansky, assistant surgeon, U. S. Public Health Service Reserve.

Dr Abarbanel Awarded Prize—Dr Abraham R. Abarbanel, fellow in obstetrics and gynecology, George Washington University School of Medicine, Washington, was recently presented with the foundation prize of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons for 1943. Dr Abarbanel's thesis was entitled "The Spasmodic Action of Magnesium upon the Tetanically Contracted Human Uterus."

Memorial to Dr Sofie Nordhoff-Jung—A convalescent ward is to be maintained in Georgetown University Hospital with \$290,000 bequeathed by the late Dr Sofie A. Nordhoff-Jung, professor of gynecology emerita at the Georgetown University School of Medicine. The physician, who died on June 6, declared in her will that with the exception of small sums her whole estate would go to the hospital. A bequest of \$35,000 was left outright to the president and directors of Georgetown University, the sum to be added to \$15,000 previously given for the ward. The convalescent ward will be named as a memorial to Dr Nordhoff-Jung and her husband, the late Dr Franz A. R. Jung. In 1923 Dr Nordhoff-Jung established a cancer prize to encourage researches in the etiology, prevention and treatment of cancer.

FLORIDA

Meeting of New Graduate Faculty of Medicine—On August 14 the first official meeting of the faculty of the department of medicine of the Graduate School of the University of Florida was held in Jacksonville with Dr Turner Z. Cason, Jacksonville, director of the department, presiding. The tentative program for developing the department calls for the division of the department into eleven sections:

Section on Roentgenology, Dr Joshua C. Dickinson, Tampa
Section on Internal Medicine, Dr William C. Blake, Tampa
Section on Public Health, Dr Henry Hanson, Jacksonville
Section on Pediatrics, Dr Thomas E. Buckman, Jacksonville
Section on Ophthalmology, Dr Shirley A. Richardson, Jacksonville
Section on Urology, Dr Robert B. McIver, Jacksonville
Section on Obstetrics, Dr Samuel R. Norris, Jacksonville
Section on Gynecology, Dr Charles J. Collins, Orlando
Section on Otolaryngology, Dr H. Marshall Taylor, Jacksonville
Section on Pathology, Dr Lucien Y. Dyrenforth, Jacksonville
Section on Surgery, Dr Edward Jelks, Jacksonville.

In each section a staff of instructors who have been certified by their specialty boards will serve with the chairman. The work of the department will be carried on by the University of Florida with the cooperation of the state medical association and the state board of health with Dr Cason in general charge

as director. At the meeting Dr Cason requested each section chairman to prepare a syllabus, appoint instructors and suggest the number of hours required and the time of year best suited to offer graduate work. The new department of medicine, which will conduct graduate courses and promote research in medicine and surgery, is the outgrowth of the annual graduate short course for doctors of medicine inaugurated about ten years ago (*THE JOURNAL*, April 17, p. 1296).

ILLINOIS

Dr Goodloe Named Deputy Commissioner at Peoria—Dr Ollie M. Goodloe, assistant director of county health work, Kentucky State Department of Health, has been appointed deputy commissioner and director of maternal and child health of the Peoria City Department of Health. He succeeds Dr Hugo V. Hullerman, who was recently named chief of the division of maternal and child hygiene of the Illinois Department of Public Health (*THE JOURNAL*, July 10, p. 756). Dr Goodloe, who graduated at the University of Louisville School of Medicine in 1932, was to take over his new work on October 1.

Advisory Committee to Assist Aid Commission in Help for Blind—An advisory committee consisting of four physicians and four other citizens of the state who are interested in the problems of the blind has been appointed to assist the Illinois Public Aid Commission in administering the state's program for the blind. Physicians on the advisory committee are Drs Watson Gailey, Bloomington, Harry S. Gradle, Chicago, Charles H. Pluifer, Chicago, and Walter D. Stevenson, Quincy. Citizen members of the committee are Herbert F. Geisler, attorney, Chicago, Miss Audrey Hayden, Chicago, executive secretary, Illinois Society for the Prevention of Blindness, Samuel S. Holmes, Highland Park, attorney, and Frank M. Lay, Kewanee, manufacturer. The committee will advise the commission on such special problems relating to blindness as examinations, remediable conditions, rehabilitation, employment and social adjustment and on relationships with existing services for the blind in the state. Assistance under the program will supplant the blind pensions now being furnished by the counties from funds provided jointly by the counties and the state. Blind assistance under the new program will be financed by the state and federal governments through the social security board. Grants under the new program are planned for award during October.

Chicago

Distinguished Service Award Goes to Nathan Davis—The Mississippi Valley Medical Society at its meeting in Quincy, September 30, presented its distinguished service award for 1943, consisting of a gold medal and certificate, to Dr Nathan S. Davis. The citation accompanying the award acknowledged Dr Davis's contributions as an investigator and clinician.

Dr Koch Honored—Fred C. Koch, Ph.D., Frank P. Hixon, distinguished service professor emeritus of biochemistry, University of Chicago, was guest of honor at a dinner in the Morrison Hotel, October 1, given by the Chicago Section of the American Institute of Chemists. Dr Koch was presented with a scroll testifying to his numerous contributions in scientific research. Among the speakers were Hilton I. Jones, Ph.D., of the Chicago chapter of the institute, who was the toastmaster, Edward A. Doisy, Ph.D., professor of biochemistry, St. Louis University School of Medicine, St. Louis, Victor Conquest, director of research of Armour and Company and George K. Link, Ph.D., professor of plant pathology at the University of Chicago.

Physician's Conviction on Abortion Charge Upheld—The Illinois Supreme Court in Springfield upheld the conviction of Dr Emil Gleitsman, Chicago, who was found guilty of murder by abortion in the Cook County Criminal Court in 1942 and was sentenced to fourteen years in prison. According to the *Chicago Tribune* the physician has a police record going back to 1928, when the grand jury refused to indict him for abortion. In 1934, the report stated, he was convicted three times on a charge of manslaughter by abortion, but each time the supreme court reversed the conviction and the charge was eventually dropped. After the recent decision Dr Gleitsman was surrendered by his bondsman and taken to the Cook County jail to await transfer to the penitentiary, it was stated.

LOUISIANA

Personal—Dr L. Everard Napier, for twenty years professor of tropical medicine at the Calcutta School of Tropical Medicine, is visiting professor of tropical medicine at Tulane University of Louisiana School of Medicine, New Orleans, he

has also been appointed consultant on tropical medicine to the Secretary of War—On August 4 Ernest Carroll Faust, Ph D, professor of parasitology and acting head of the department of tropical medicine Tulane University of Louisiana School of Medicine, New Orleans, was presented with a diploma of corresponding membership by the Academia Nacional de Medicina of Mexico

MARYLAND

Personal—Dr Herbert C Blake, Baltimore, on August 16 was elected state commander of the American Legion—New appointments to the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, include those of Francis G Evans, Ph D, formerly instructor in zoology, Duke University, Durham, N C as assistant professor of anatomy and Robert S Anderson, Ph D biophysicist Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, as assistant professor of physiology

MASSACHUSETTS

New Appointments to State Medical Board—Dr George L Schadt, Springfield was recently appointed a member of the state board of registration in medicine to fill the expired term of Dr Harry L Stevens New Bedford and Dr William F O'Reilly, Lynn, to fill the unexpired term of the late Dr Francis R Mahony Dr H Quimby Gallupe, Waltham is the secretary

MICHIGAN

Crippled Children's Society Changes Name—The Michigan Society for Crippled Children has changed its name to the Michigan Society for Crippled Children and Disabled Adults Percy C Angove, Detroit is the secretary

Physician Indicted for Conspiring Against Government—Dr Fred William Thomas, Detroit, was one of a group named by the Federal Grand Jury, September 17 on charges of 'conspiring under the wartime espionage act to supply the German government with information regarding defense and war moves of the United States' newspapers reported Conviction of the physician as charged could result in the death penalty or five to thirty years' imprisonment.

Dr McKhann Joins Parke, Davis & Company—Dr Charles F McKhann has resigned as professor of pediatrics and communicable diseases at the University of Michigan Medical School Ann Arbor, to become assistant to the president of Parke, Davis and Company effective October 15 Dr McKhann, who will devote his time entirely to the scientific activities of the company, is also giving up his position as professor of maternal and child health in the School of Public Health at Michigan A graduate of the University of Cincinnati College of Medicine Cincinnati in 1923 Dr McKhann became associated with Harvard Medical School in 1929, where in 1940, when he joined the Michigan faculty, he was associate professor of pediatrics and communicable diseases He held a similar appointment in the Harvard School of Public Health From 1935 to 1936 he had been visiting professor of pediatrics at Peiping Union Medical College, Peiping China He is vice president of the American Society for Clinical Investigation and in 1936 was president of the Society for Pediatric Research

MINNESOTA

The Judd Lecture—The eleventh E Starr Judd Lecture will be delivered in the Museum of Natural History Auditorium at the University of Minnesota, Minneapolis, December 6, by Major Gen Norman T Kirk, surgeon general of the U S Army His subject will be "Surgery in War"

New Officers of Southern Minnesota Group—Dr Carle B McKug, Pine Island was elected president of the Southern Minnesota Medical Association at the annual meeting held in Austin August 23 Dr Charles M Robilliard Faribault and Dr Charles L Sherman, Laverne are vice presidents and Dr Austin C Davis Rochester is secretary treasurer

Personal—Dr Gustaf A Hedberg assistant medical director of the Nopeming Sanatorium, has been appointed medical superintendent to succeed Dr Arthur T Laird who has held the position since its inception in 1912—Dr Heitor P Fróes Brazilian specialist in tropical diseases, gave a lecture on August 30 at the Mayo Clinic, Rochester on Old and New Tropical Diseases in Brazil—Dr William A O'Brien, director of postgraduate medical education at the University of Minnesota Medical School, Minneapolis has been awarded an honorary fellowship by the American College of Hospital Administrators for interest and service in hospital administration

MISSOURI

Physician Indicted on Narcotics Charge—Dr Donnell M Pearson Louisiana was named in an indictment returned by the federal grand jury, September 17, according to the St Louis *Post-Dispatch* The physician is accused of acquiring narcotics for the purpose of supplying addicts and for failure to keep adequate records of his dispensation of the drugs The newspaper stated that the physician bought more morphine in the last two years than was used by all the St Louis hospitals

Fifty Years' Membership—On October 5 the following members of the St Louis Medical Society were honored at a meeting in recognition of their completion of fifty years in the practice of medicine Drs Orril L G Suggett Asheville, N C, Adelheid C Bedal, Kirkwood and Vilray P Blair, Arthur H Bradley Harry S Crossen, William Antoir Hall Joseph J Meredith, William Jackson Miller, Frederick P Parker Ferdinand O Sturhahn Joseph M Trigg, Harry R Burton, all of St Louis, and Clarence M Nicholson, Charlotte, C H., Va The meeting also served to honor members of the society who are now with the armed forces The speakers included Philip A Shaffer, Ph D, dean of Washington University School of Medicine, who presented "A Salute to Our Colleagues at the Front," and Father Alphonse M Schwitalla SJ Ph D dean of the St Louis University School of Medicine, "Medicine and Our Victory"

NEW JERSEY

Dr Paton Celebrates Ninetieth Birthday—Dr Thomas L Paton, Paterson, reported in the newspapers as the oldest practicing physician in New Jersey, observed his ninetieth birthday, August 15 Dr Paton has practiced fifty-five years in Paterson and for the past eighteen years has been medical inspector of the Paterson public schools The *Passaic Herald News* states that Dr Paton had worked as a textile engraver for eighteen years before he began the study of medicine at the College of Physicians and Surgeons, Baltimore, where he graduated in 1887

NEW YORK

Cancer Teaching Day—A cancer teaching day was held at the Black River Valley Club Watertown October 14 under the auspices of the medical societies of the counties of Jefferson Lewis and St Lawrence, the state medical society and the state department of health The speakers were

Dr Ethan F Butler Ithaca Cancer of the Lung
Dr Walter T Murphy Buffalo What the Practitioner Should Know About Radiation
Dr Lloyd F Craver New York Significance of Enlarged Lymph Nodes
Dr Clyde L Randall, Buffalo The Significance and Management of Abnormal Vaginal Bleeding

Medical Society Rejects Federal Maternity Care Plan—The Albany County Medical Society in a resolution made public on October 1, approves the intent of the state health department for allocation of federal money for maternity care of servicemen's wives but attacks the methods provided as an infringement on the 'individual rights and freedom of the wives receiving benefits' The resolution also states that the plan establishes 'a direct government-physician relationship which we sincerely believe to be detrimental to the well being of wives of service men and ultimately to the interests of the nation as a whole' As a substitute for the plan the medical society proposed that allotments be paid to eligible wives and that they be permitted to use the funds as they see fit in paying hospital and doctors' bills Officers of the society said it was stated in spite of its disapproval of the plan put into effect several weeks ago, that no woman or child would lack medical care

New York City

First Harvey Lecture—Dr Harold G Wolff associate professor of medicine Cornell University Medical College will deliver the first Harvey Society Lecture of the current series at the New York Academy of Medicine October 28 He will discuss *Some Observations on Pain*

Russian Medicine—Dr Henry E Sigerist director of the Johns Hopkins University Institute of the History of Medicine Baltimore addressed the New York Society for Medical History September 30, on Russian Medicine Past and Present The address was discussed by Dr Jack M Rowe medical adviser to the Soviet Government Commission and Dr Arthur T Chace, president of the New York Academy of Medicine

The Niles Lecture—Dr Edward A Strecker professor and head of the department of psychiatry University of Pennsylvania School of Medicine Philadelphia and consultant to the Army Navy and Air Forces in psychiatry will deliver the annual Walter L Niles Memorial Lecture at Cornell University Medical College October 19 under the auspices of the Tau

Chapter of Nu Sigma Nu. His subject will be "The Neuropsychiatry of Global War." The lecture is given annually in memory of Dr. Niles, a former dean of the medical college and for many years professor of clinical medicine at Cornell.

Drive for Funds Exceeds Goal—The first annual development fund appeal made by the Long Island College of Medicine, Brooklyn, raised \$42,118, exceeding its intended total of \$40,000. The fund will be used to pay larger professorial salaries, to provide departments with more technical assistance and to strengthen the teaching, research and service program in other ways. Gifts from business interests totaled \$13,158, contributions by the general public \$18,592, and the medical profession gave \$10,368. The effort represented the first step toward building up an annual educational fund of at least \$300,000.

Wartime Rules for Visitors in Hospitals—The posting in member hospitals of Blue Cross placards bearing wartime rules for visitors was announced recently by the Associated Hospital Service of New York. The visiting regulations request that visitors voluntarily restrict the frequency of their visits and send fewer gifts to patients, especially if the gifts require care. Visitors are further asked to make their stay as brief as possible, not to discuss war, illness or anything that will excite the patient, and to speak quietly, walk softly and make no unnecessary telephone calls so that the telephone lines will be kept open for emergencies.

OHIO

One Hundredth Anniversary at Western Reserve—The week of October 24 will be devoted to a celebration of the one hundredth anniversary of Western Reserve University School of Medicine, Cleveland. Anniversary ceremonies will be held on October 27 and alumni clinics and commencement activities will take place on October 28. Among the speakers on October 27 will be Dr. George H. Whipple, dean of the school of medicine and dentistry, University of Rochester, N. Y., on "Blood Plasma Proteins: Their Production, Function, Substitution and Replacement" and Dr. Alan Gregg, director for the medical sciences, Rockefeller Foundation, New York, "The Matrix of Medicine." In the evening Dr. Reginald Fitz, Boston, will address a dinner on "The Crimson Thread." On October 28 the speakers will be

Dr. Horace M. Korns, Iowa City, The Modern Treatment of Chronic Congestive Heart Failure
Dr. Ralph M. Waters, Madison, Wis., Indications for and Complications of Crural Anesthesia
Dr. Clarence D. Selby, Detroit, The Future of Industrial Medicine
Dr. Daniel B. Kirby, New York, One Hundred Years of Progress in Cerebral Surgery
Dr. Marion A. Blankenhorn, Cincinnati, Multiple Peripheral Neuritis
Dr. Harry Goldblatt, Cleveland, Hypertension
Dr. Francis P. Corrigan, Caracas, Venezuela, S. A., Treatment of Malaria
Frederick C. White, Ph.D., Cleveland, Episodes in One Hundred Years
Dr. Torald H. Sollmann, Cleveland, Farewell 1943, Hail 2043

OKLAHOMA

State Department Rejects Maternal Care Plan—The Oklahoma State Department of Public Health recently announced that it was withdrawing from participation in the federal maternal and child care plan. According to a report, a ruling by the attorney general of the state gave right of participation to any person, either a layman or a medical man. Under these circumstances the state health department was unwilling to continue its activities any further. Pending further notice, physicians who are caring for patients under the plan should now make other arrangements for remuneration, it was stated.

SOUTH DAKOTA

Lectures on Tropical Medicine—Dr. Marcos N. Fernandez, professor of pathology and bacteriology in the Marquette University School of Medicine, Milwaukee, toured South Dakota, September 19 to 26, lecturing on tropical diseases to medical groups in Aberdeen, Huron, Sioux Falls, Pierre, Rapid City and Fort Meade. The trip was sponsored by the South Dakota State Board of Health and the U. S. Public Health Service to bring the latest developments in tropical medicine to the medical profession of South Dakota.

Public Health Association Meeting—The annual meeting of the South Dakota Public Health Association was held in Huron, September 21, under the presidency of Dr. George L. Hickman, Bryan. A round table discussion was held on the "Problems of the Public Health Officer" conducted by Dr. Antony Triolo, Pierre, director of the divisions of maternal and child health and crippled children, of the state board of health. Other speakers included

Mr. I. R. Vaughn, Pierre, Vital Statistics and Public Health Education
Dr. Marcos Fernandez, Milwaukee, Tropical Diseases
Dr. William L. Meyer, Senator, Follow Up Technique in Tuberculosis
Dr. Gilbert Cottam, Pierre, Public Health in South Dakota

WEST VIRGINIA

Community Medical Service Plans Approved—Regional nonprofit medical service plans will be immediately developed as community projects with the endorsement and support of component medical societies in accordance with unanimous action of the council of the West Virginia State Medical Association on September 30. The project was submitted to the council in the form of a report of the fact finding and planning committee on September 29. As presented in the report, the plans will be operated by group hospital service with the joint supervision of an advisory committee elected by the county medical society and a central state committee appointed by the president of the state medical association. A medical service contract will be offered to the public on a periodic prepayment plan to pay the cost, in whole or in part, of surgical, obstetric and medical service while a bona fide patient in a hospital. The details of these plans and contracts will be left to each community and nothing will be done that might in the least interfere with the doctor-patient relationship, the patient to have the free choice of hospital and physician. Under the setup it will be the duty of the state committee, together with the committee representing hospital plans operating within the state, to formulate a basic contract, and particularly to see that this service is made available to every community of the state, with particular emphasis on rural areas. As the care of the indigent sick is a joint responsibility of the community and the medical profession, the report urges further study in each community toward improving such care if necessary. Each county society is urged, through a committee, to survey its plan for the care of the indigent sick and to report to the state fact finding and planning committee. The report also recommends that the public health work be extended and that measures be taken to assure adequate public health units for every county or group of counties, pointing out that the work of these units should be limited to preventive medicine, immunization, and particularly to education of the public in health matters.

GENERAL

Medical Woman's Journal Observes Fiftieth Anniversary—With the publication of its September issue, the *Medical Woman's Journal* completes fifty years. The publication was founded by the late Margaret Hackedorn Rockhill. Dr. Elizabeth Mason Hohl, Los Angeles, is the editor in chief.

Special Society Elections—Dr. Donald C. Smelzer, Philadelphia, was chosen president-elect of the American Hospital Association at its recent annual meeting and Frank J. Walter, Denver, was installed as president. Dr. Harley A. Haynes, Ann Arbor, is treasurer and George Bugbee, Chicago, executive secretary. Dr. Fred B. Moor, Los Angeles, was chosen president-elect of the Society of Physical Therapy Physicians at its meeting in Chicago, September 8, and Dr. William H. Schmidt, Philadelphia, was installed as president. Dr. William D. Paul, Iowa City, is vice president and Dr. Milton G. Schmitt, Chicago, is the secretary-treasurer. Dr. Miland L. Knapp, Minneapolis, was chosen president-elect of the American Congress of Physical Therapy at its twenty-second annual session in Chicago in September and Dr. Kristian G. Hansson, New York, was installed as president. Other officers include Drs. Richard Kovacs, New York, secretary, John S. Coulter, Chicago, treasurer and Walter J. Zeiter, Cleveland, executive director. The gold key of merit was awarded to Dr. Coulter.

New Home for Institute of Physics—A five story building at 57-59 East Fifty-Fifth Street, New York, formerly a private residence, has been acquired by the American Institute of Physics for its national headquarters and its affiliated scientific societies. The institute has been occupying rented space since its establishment in 1931. It is anticipated that occupying its own home will enable the group comprising the institute to carry forward their aims for "high professional standards, improvement of publications and meetings, improvement of the teaching of physics in high schools and colleges, expansion of facilities and resources for research, rehabilitation of war-interrupted careers and extended activities to advance the science of physics and facilitate the work of physicists." The American Institute of Physics is composed of the American Physical Society, Optical Society of America, Acoustical Society of America, American Association of Physics Teachers and the Society of Rheology. Associated with the institute are the American Society for X-Ray and Electron Diffraction and the Electron Microscope Society of America.

Stamps for Cancer Fund Raising in Other Countries—Fifty one stamps have been issued by various countries that have been used to raise funds for the control of cancer and for the treatment of cancer, according to an article in the Bulletin of the American Society for the Control of Cancer. The stamps consisted of regular postal issues that prepaid postage on letters. Postal tax stamps were also issued. These did not pay postage, but their use was compulsory on every letter passing through the mails for certain periods of time. The money derived from the sale of these stamps provides for a cancer fund. The last type of stamps issued were semipostal stamps. These were sold for a premium over their face value to raise money for some purpose. The countries that have issued these stamps are Afghanistan, Cuba, Danzig, Denmark, Ecuador, France, French Colonies, Monaco, Norway, Panama and Sweden.

Child Care Units Only Partly Successful—A survey of manufacturing cities, reported in the *New York Times*, September 24, shows that the child care centers and nursery schools, set up for the benefit of working mothers in areas where government contracts have increased the ordinary working conditions, are standing idle or are only partly utilized. Officials have agreed that the program, established by local initiative and by funds supplied by the Federal Works Agency, so far has proved only in part successful. Ignorance of the facilities provided to care for children while mothers work on the assembly lines was the explanation most generally offered. In New Jersey Dr. Ellen C. Potter, chairman of the child care committee of the New Jersey State Civilian Defense Office, Trenton, reported on September 30 that the child care centers for children of preschool and school age throughout the state are being ignored by working mothers who leave their children with neighbors or relatives when they go to work. To date she said twelve communities in the state have received Lanham funds for community centers and five grants are pending. On September 15 registration at seven units was 230 but actual attendance was down to 187. Reasons for the poor showing given by some mothers were the difficulty in transporting children to and from the nurseries in getting both children and mothers ready in the morning and fathers objecting to having family life dislocated.

MEDICAL BILLS IN CONGRESS

Bills Introduced—The President has transmitted to the Congress supplemental estimates of appropriation for the Public Health Service as follows: (1) an estimate of \$10,000,000 to be used in carrying on the nurses training program for the period Jan 1 to March 31, 1944 (H. Doc. No. 311) and (2) an estimate of \$2,350,000, an undisclosed part of which will be used for the supplying by the Public Health Service, on request of state authorities of needed medical and dental care, either by temporary financial aid or by direct employment of doctors and dentists, in certain critical areas where acute shortages have developed (H. Doc. No. 321). Under the latter estimate too the Public Health Service would be authorized to assign its medical and dental personnel to critical areas when so requested by a state department of health. The services of such personnel, it is proposed, will be furnished the public in accordance with schedules of fees approved by the state health departments and the Surgeon General of the United States, which fees will be collected by and used at the direction of the state departments of health, to defray the expenses thereof incident to the rendition of such medical and dental services. Any balances remaining at the end of a fiscal year will be covered into the treasury as miscellaneous receipts. These estimates are pending in the House Committee on Appropriations. H. R. 3379, introduced by Representative Bulwinkle, North Carolina, proposes to codify the laws relating to the United States Public Health Service. According to Representative Bulwinkle, this bill is designed to bring together in one enactment all of the laws relating to the Public Health Service to permit the administrative reorganization of the service to adjust the war-time status of the commissioned corps of the service to reconcile the conflicts and eliminate the overlapping in the law, and to make certain mechanical revisions found necessary by long administrative experience. This bill, in the words of Representative Bulwinkle, is in no sense a measure designed to place the Public Health Service into new fields of operation or to enlarge its functions and powers. Its sole purpose is to enable the Public Health Service to perform its present statutory functions more effectively.

LATIN AMERICA

Health Activities in Latin America—Dr. George C. Dunham, formerly director of the division of health and sanitation of the coordinator of Inter-American Affairs, on September 2 was appointed executive vice president of the Institute of Inter-American Affairs and assistant coordinator in charge of the basic economy department. Dr. Albert R. Dreissbach was named director of the division to succeed Dr. Dunham.

Construction—A 14 bed hospital was established in La Boca Camp during July along the eastern border of Lake Yojoa, Honduras. A 50 bed hospital and health center is planned in Paraguay by building an addition to the existing 18 bed Barrio Obrero Hospital.

Search for Cinchona—According to the *Inter-American Economic News* a hitherto undeveloped cinchona area has been surveyed in the Balsa Pampa region of Central Bolivia. A number of new cinchona regions have been discovered in Peru and in the Huarí Huarí Valley.

Leprosy Control Program—Dr. Manuel Gimenez Uriarte has been appointed director of the Colony at Sapucay by the minister of health of Paraguay. It has also been proposed that Dr. Uriarte, who has recently returned from Rio de Janeiro from a fourteen months study of leprosy, be in charge of the clinic and isolation hospital facilities for patients with leprosy planned for Asuncion.

Malaria—Malaria control activities are a major development in the health and sanitation of the Amazon Project in Brazil, where the disease is the chief cause of morbidity and mortality. A number of medical posts have been established to provide dispensary medical care and serve as the centers for malaria control activities. In Marmelade, Haiti, sixty deaths from malaria had occurred during the three months prior to July 22. The town of Marmelade has a population of less than 1,000 persons.

Fellowships—The John Simon Guggenheim Memorial Foundation, New York, recently awarded fifteen fellowships to Latin Americans seven to biologists.

Jose Antonio Goyco, assistant in chemistry, School of Tropical Medicine, University of Puerto Rico, Santurce, P. R.

Mario Autuori, assistant in the Biological Institute, São Paulo, Brazil.

Dr. Isabel P. Farfante, instructor in zoology, Faculty of Science, University of Havana, Cuba.

Juan Ignacio Valencia, agrostologist, Darwin Botanical Institute, Buenos Aires, Argentina.

Raul Cortes Pena, entomologist, Ministry of Agriculture, Santiago de Chile.

Dr. Gabriel Gasic, Livacic, chief of the laboratory, Institute of Biology of the University of Chile, Santiago de Chile.

Dr. Fabio Leoni Werneck, chief of the laboratory, Instituto Oswaldo Cruz, Rio de Janeiro, Brazil.

Tuberculosis—The News Letter of the Health and Sanitation Division states that tuberculosis ranks second only to malaria as a major public health problem throughout the other American republics. It is the principal cause of death in Lima, Sucre, Rio de Janeiro and Caracas. Tuberculosis control programs are being conducted in Colombia, Ecuador, El Salvador, Honduras, Nicaragua and Paraguay. Plans are being formulated to include Bolivia, Chile and Peru. Tuberculosis dispensaries have been established. In Nicaragua the national department of health has an administrative division for tuberculosis. The tuberculosis control project started there seeks to provide the health department with adequate space and equipment necessary for tuberculosis control throughout the country and to train public health nurses to carry on tuberculosis work. In Ecuador a 300 bed tuberculosis hospital is now being constructed at Guayaquil.

Floating Launches—For the Amazon project in Brazil a fleet of boats is planned some to serve as floating dispensaries to take medical supplies to the isolated, scattered population groups along the rivers and others to serve as a means to transport medical personnel and supplies. Twenty of these launches have already been placed in operation. The dispensary launch *Constantino* returned during July to Iquitos, Peru from a months trip on the Amazon and Marañon rivers and the lower part of the Pastaza and Morona rivers. During the trip the launch visited 101 settlements, villages or groups of houses. A total of 674 patients were treated, 352 for intestinal parasites, 101 for malaria and 73 for yaws. During this trip all of the military garrisons along the river were visited and medical care was given to any of their personnel who were ill. New maritime distribution points were established at San Lorenzo, Nauta, Tamchivacu and Concordia.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug 27, 1943

Nervous Disorders of Swallowing

At the Laryngological Section of the Royal Society of Medicine, Sir Arthur Hurst dealt with nervous disorders of swallowing, a subject on which he has done important work. His researches on the sensibility of the alimentary tract have shown that tactile sensibility extends beyond the mouth to the junction of the pharynx and esophagus but no farther. However, the esophagus is sensitive to cold and heat, though thermal stimuli produce no sensory response in the stomach, and distention produces a feeling of fulness which merges into pain when the stimulus is increased. Consequently if food is masticated until it is semifluid and has acquired the body temperature, its passage beyond the pharyngoesophageal sphincter is not appreciated, but if swallowed in unchewed lumps while still hot or cold its passage can be felt as far as the cardia. The esophagus being a fixed organ, localization of sensory response to thermal and distention stimuli is accurate.

Theoretically there is no reason why hysterical dysphagia should not develop in the form of paralysis or incoordination of the voluntary muscles concerned in the first two stages of swallowing, in which food passes through the sensitive buccopharyngeal cavity. But it would be unlikely to develop in the esophagus or at the cardia, as the passage here is entirely independent of voluntary action and normally is not felt, the food disappearing into the void after passing the pharyngoesophageal sphincter, except when very cold, very hot or in large lumps. Hysterical dysphagia is rare. In the last war Hurst saw more than 100 cases of hysterical aphonia and over 50 of hysterical vomiting in soldiers, but no case of hysterical dysphagia.

Dysphagia may occur in various organic nervous diseases as a result of paralysis of the muscles concerned in the first and second stages of swallowing. The esophagus itself and the cardia are never involved. In diphtheria the toxin ascends by the lymphatics of the nerves from the site of the lesion to the central nervous system, where it puts out of action the corresponding nuclei. Therefore the paralysis of the soft palate which results in regurgitation of food through the nose and the rare pharyngeal paralysis which results in severe dysphagia, occur only in faucial diphtheria. In motor neuron diseases, which include progressive muscular atrophy and amyotrophic lateral sclerosis, dysphagia may occur if the vagal nucleus is involved. It always occurs in progressive bulbar palsy. Myasthenia gravis, though a primary muscular disease, produces a similar upper dysphagia. Upper dysphagia in anemic women was first described by R. D. Paterson in 1906 but attracted so little attention that it was redescribed as the Plummer-Vinson syndrome. Hurst therefore calls it Paterson's syndrome. It occurs in about 15 per cent of cases of simple achlorhydric anemia, which is common in women, especially in those between 30 and 50. It is the direct result of iron deficiency, which causes not only the anemia but also atrophy of the mucous membrane of the tongue and pharynx, cracks at the angles of the mouth, loss of teeth and spoon shaped brittle nails. The atrophy of the pharyngeal mucosa results in loss of sensibility, so that the afferent side of the reflex, on which the second stage of swallowing depends, is impaired. Treatment consists in administration of iron, which often restores to normal the atrophied mucosa. In neglected cases this may undergo malignant degeneration.

The commonest nervous disorder of swallowing is achalasia of the cardiac sphincter. It produces stagnation of food and dilatation of the esophagus, although there is no organic obstruction. The complete absence of hypertrophy of the sphincter

found post mortem shows that cardiospasm is not the cause, as was believed. In 1915 Hurst suggested that the obstruction might be the result of absence of relaxation of the sphincter. He believes that this accounts for every case of megaesophagus. In 1924 he suggested that it might be due to organic disease of Auerbach's plexus, which proved correct. The simplest and most effective treatment is by means of mercury bougies, which Hurst devised in 1913.

Too Many Facts

In his introduction to the fifth edition of McGregor's *Synopsis of Surgical Anatomy*, the professor of anatomy at Witwatersrand University, R. A. Dart, discusses a problem which the vast increase of human knowledge has rendered pressing. It has been stated that the brain of man can absorb only 200,000 distinct facts. But the one subject of anatomy is so great that if a student absorbed the whole he would, according to this calculation, have no mental room left for the absorption of anything else. In 1756 the surgeon Cheselden published a textbook of anatomy in which he was able to dispose of the whole subject in three hundred and thirty-four pages of text and sixteen of index. Today the subject has reached such monumental proportions that in one book the index occupies 113 pages and contains sixteen thousand subject references. Professor Dart describes the unfortunate student as called on to memorize an excessive number of isolated facts not lending themselves to logical connection or correlation in our present state of knowledge. He therefore requires the help of supplementary books written by discerning men whose single ambition is to provide the examination candidate with much needed assistance in a difficult situation and the prospective surgeon with the more significant anatomic facts relevant for practical application. This is what McGregor has done in his eminently successful book.

Too many facts (or alleged facts, for which life is too short), have become a difficulty in every branch of medicine. One way of surmounting it is by specialization which, though it has already reached a high degree, still goes on. But the loss of breadth of view, and even of common sense, of the specialist mind has become proverbial. Further, not all can become specialists, there remains a sphere which can be filled only by the general man. The remedy seems to lie in the fact that the advance of science involves development as well as growth. Knowledge becomes more definite and new principles are formulated. The accumulated facts are seen to be only examples of these principles and can largely be dispensed with in teaching. But new principles develop all too slowly, while new facts, or more often alleged new facts, accumulate at an enormous rate. Hence the increased size and increased number of our journals and books, for which, again, life is too short.

The Clinical Picture of Gas Gangrene

Gas gangrene due to *Clostridium oedematis maligni* is often overlooked in its early stages. The *Army Medical Department Bulletin* therefore calls attention to the more detailed clinical picture recently given. An important early symptom is a feeling of weight in the affected limb (or amputation stump) followed in two to eight hours by much local pain. Considerable edema soon appears, accompanied by profuse yellowish or brownish yellow serous discharge from the wound. Blood stained discharge seldom, if ever, occurs. Gas has not been a noticeable feature. Diagnosis must not depend on the detection of smell, since it occurs only when there is gross contamination with other organisms. Discoloration of skin appears late.

The general condition is poor, for the toxemia is out of proportion to any obvious local lesion. The pulse is rapid and of poor volume and the blood pressure falls low at an early stage of the disease. Pyrexia is not remarkable, seldom over 100 F. If there is much oozing hemoglobin may rise to 130 per cent. Mental changes are not prominent. The affected muscles are

grossly swollen, slimy and, in the early stages, firmer than normal. At first they are pale but later become dark purple, friable and almost deliquescent. Essentially the picture is one of severe toxemia with little local reaction other than swelling. It is important that this local lack of obvious signs in the wound should not delay diagnosis.

Artificial Insemination

In the House of Lords Lord Brabazon drew attention to recent advances in regard to insemination. He understood that in the United States there was an increasing demand that, if a husband was sterile, his wife, rather than adopt a child, should be inseminated by an unknown father. It was estimated that there were ten thousand applicants among childless couples. A child so produced would be regarded by the world as legitimate, and only the doctor would know the truth. This was open to grave abuses. Some women might prefer to have children without marriage. The church would have to face that question.

Viscount Bledisloe hoped that in this country we would do everything to discourage a process which could only in the long run tend to break down family life. For the government, the duke of Norfolk, joint parliamentary secretary to the Ministry of Agriculture, said that the minister of health was closely watching the question. Artificial insemination in animals today provided a means of improving live stock. The use of a valuable sire could be extended. A small farmer was able to use a sire which he could not otherwise. In certain respects the process was a safeguard against spreading disease. Two large experimental stations had been set up.

Improvement of the Milk Supply

The government has decided on a progressive policy for the improvement of the milk supply. The basis of a sound milk policy must be a well bred healthy dairy herd. At present many herds are not inspected at all. It is proposed to arrange for a minimum of one inspection each year of every dairy herd and to inspect more frequently those herds with a bad disease history or where the milk is not heat treated before sale. Owing to transport difficulties much of the tuberculin tested milk now produced is bulked with ordinary milk. To encourage the production of this valuable milk the government proposes to pay a uniform production premium of 8 cents a gallon. The minister of food will take steps to insure that as much milk as possible from tuberculin tested herds is sold to consumers under proper label. The price will be only slightly higher than that of ordinary milk. In certain areas where the policy is possible the government will prohibit the sale of milk to the public unless it is either (1) from tuberculin tested herds, (2) accredited milk sold by a retailer who sells the milk of a single accredited herd or (3) rendered safe by heat treatment.

Death of Sir Beckwith Whitehouse, President of the British Medical Association

Sir Beckwith Whitehouse, president of the British Medical Association, died suddenly after attending a meeting of the council. He was in his sixty-first year. After a distinguished university career he settled in Birmingham as an obstetrician and gynecologist. In 1924 he was appointed professor of midwifery and diseases of women at the university, a chair previously held by Lawson Tait. A brilliant expositor and skilful operator, he was a powerful influence in the medical school. He originated some surgical procedures and invented a cecal retractor for appendectomy by which the appendix and part of the cecum were isolated from the peritoneal cavity and edges of the wound. In 1933 he visited the United States at the invitation of the American College of Surgeons of which he was made an honorary fellow. He was also made an honorary fellow of the Canadian Medical Association. He edited the fourth edition of Eden and Lockyer's *Gynecology*, which was published in 1935. In the last great war he served as an officer in charge of a surgical division.

BRAZIL

(From Our Regular Correspondent)

Aug 31, 1943

A Survey of Hospitals

A chapter of the 1942 annual report of the director general of the Brazilian National Department of Health is devoted to the division of hospitals, created in the department a little more than a year ago. Dr. Theophilo de Almeida is head of the division. One of the first efforts of Dr. de Almeida was the organization of a roster of the hospitals of Brazil. Some averages computed from the first information gathered provide an interesting picture of the hospital situation of the country. At the end of 1942 a rather complete roster of the hospitals (only those with at least 25 beds are called hospitals) gave a total of 1,303 institutions for the whole of the twenty states, the Acre Territory and the Federal District (city of Rio de Janeiro). As Brazil has an area of 3,287,595 square miles and the 1942 population was reckoned at 43,027,000, each hospital has to serve an average of 2,523 square miles and 33,021 people. Owing to the large differences in the density of population and in the general development of the several sections of the country, these averages for the individual sections show notable variations. It seems strange at first glance that the Acre Territory should occupy the highest position, with 7.23 hospitals per hundred thousand of population, but this territory, far inland in the Amazon valley bordering Bolivia and Peru, has just a few centers of population where the federal government, which directly administers this area, is doing good work to assist in the struggle against the great tropical scourges. With this exception the northern, tropical states have few hospitals—about 1 per hundred thousand of population. Above this level are only the states of Sergipe, Mato Grosso and Amazonas, respectively with 3.42, 3.39 and 3.04 hospitals per hundred thousand of population. The southern, more populated and more developed states are better equipped with hospital facilities. Minas Geraes 3.16 per hundred thousand, Rio de Janeiro 3.52, Paraná 3.92, São Paulo 4.23, Santa Catarina 5.28 and Rio Grande do Sul 6.54. The Federal District, with 93 hospitals for 1,860,000 population, has exactly 500 hospitals per hundred thousand.

Out of this total of 1,303 hospitals 457 are specialized institutions (lying-in hospitals, hospitals for children, for tuberculous patients, for the leprosy, for nervous and mental patients and others). According to the report the remaining 846 institutions considered as general hospitals, have 58,820 beds, or an average individual capacity of 69.5 beds. The same source shows that this capacity also varies widely through the different states. The highest average rate of beds per hospital is that of the Federal District: the 42 general hospitals there have a total capacity of 8,433 beds, or 200.8 beds per hospital. Next come the states of Pará with 124.3 beds per hospital, Piauí 99.3, Pernambuco 96.0, Mato Grosso 77.0, Amazonas 76.8, Rio Grande do Norte 74.6, São Paulo 73.3, Paraíba 72.9, Ceará 66.5, Rio Grande do Sul 62.6, Alagoas 62.4, Bahia 57.0, Minas Geraes 53.7, Rio de Janeiro 53.5, Maranhão 53.0 and Paraná 50.4. The remaining states (Sergipe, Espírito Santo, Santa Catarina and the Acre Territory) have less than 50 beds per hospital.

The report also gives a description of the plan prepared by the division of hospitals for cooperation with the states to develop progressively a network of hospitals needed in Brazil to improve health conditions. An important sum is set aside by the federal government this year to start the construction of small hospitals in the sections where they are most needed.

Deaths

Louis Blanchard Wilson ♂ noted pathologist and medical educator, died in Rochester, Minn., October 5, aged 76.

Dr. Wilson was born in Pittsburgh, Dec. 22, 1866, and graduated at the Pennsylvania State Normal School at California, Pa., in 1886. He taught biology in the Central High School, St. Paul, from 1888 to 1896, receiving in this year his medical degree from the University of Minnesota. He was associated with the Minnesota State Board of Health from 1896 to 1905, first as assistant and later as assistant director of the bacteriologic laboratory, and for a time taught as assistant professor of clinical pathology at his alma mater.

In 1905 Dr. Wilson joined the Mayo Clinic to organize and develop its laboratories. When the division was subdivided in 1920 he became head of the section on general pathology. He had been director of the Mayo Foundation and professor of pathology of the Graduate School of the University of Minnesota from 1915 to 1937, when he became emeritus.

During World War I he was a major in the medical corps of the U. S. Army from January 1918 to June 1919, serving for fifteen months as assistant director of the Laboratory Division of the American Expeditionary Forces. He was promoted to the rank of colonel and in 1920 received the Distinguished Service Medal. To him goes a large part of the credit for the collection and preparation of pathologic specimens from the World War in the Army Medical Museum, Washington.

From 1917 to 1918 Dr. Wilson was chairman of the Section on Pathology and Physiology of the American Medical Association and from 1923 to 1931 member of the Association's Council on Medical Education and Hospitals. A specialist certified by the American Board of Pathology, Inc., and a former member of the National Board of Medical Examiners, Dr. Wilson held memberships in numerous societies including the Southern Minnesota Medical Association, the Association of American Physicians, the American Association of Pathologists and Bacteriologists, the American Association for Cancer Research, the Association of Military Surgeons of the United States, the Czech Medical Society of Prague and the Royal Academy of Medicine. He was also a member of the Minnesota Horticultural Society and the National Rifle Association and an honorary member of the American Society of Clinical Pathologists and the Alumni Association of the Mayo Foundation. He was president of the Advisory Board for Medical Specialists from 1935 to 1937, of the Association of American Medical Colleges from 1931 to 1933 and of the National Society of Sigma Xi from 1932 to 1934. He was also chairman of the medical section of the American Association for the Advancement of Science from 1931 to 1932. In 1928 he had been ordered to active duty in the army medical department to serve on a commission conducting experiments in the ballistics of wound production. At the time of his death Dr. Wilson was senior consultant to the laboratories of St. Mary's Hospital, of which for many years he had been in charge.

Dr. Wilson was a respected leader in the field of graduate education in medicine. Calm judgment made him a most useful member of the numerous boards and committees on which he served. The fellowships, the library and the editorial sections of the Mayo Clinic testify to his interest in these fields.

William Osler Abbott, Wvynnewood, Pa., University of Pennsylvania School of Medicine, Philadelphia 1928, assistant professor of medicine at his alma mater, where he had been associate in medicine, F. M. Kirby Fellow in surgical physiology, Smith, Kline and French Fellow in medicine, instructor in medicine and assistant instructor in pharmacology, assistant professor of medicine at the Graduate School of Medicine, University of Pennsylvania, member of the Medical Society of the State of Pennsylvania, American Gastro-Enterological Association, American Society for Clinical Investigation, Amer-

ican Clinical and Climatological Association, Philadelphia Physiological Society and the American College of Physicians, specialist certified by the American Board of Internal Medicine and diplomate of the National Board of Medical Examiners, began active duty as a major in the medical reserve corps of the U. S. Army in May 1942, attached to the 20th General Hospital, Camp Claiborne, La., and was honorably discharged because of physical disability in September 1942, associate attending physician at the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, served as physician in the gastrointestinal section of the medical clinic and assistant ward physician at the Hospital of the University of Pennsylvania, member of the editorial board of *Digest of Treatment*, aged 41, died in Wauquoit, Mass., September 10, of leukemia.

Edward William Wallace, Cranford, N. J., the School of Medicine of the Division of the Biological Sciences, University of Chicago, 1935, joined the University of Cincinnati College of Medicine as an assistant professor of pharmacology and later became an associate professor, on July 1, 1942 was given a leave of absence to serve as director of the toxicologic laboratories of Merck and Company, Inc., Rahway, formerly assistant in pharmacology and instructor at his alma mater, at one time on the staffs of the National

Institute of Health, Washington, D. C., and the Food and Drug Administration, received a grant from the National Advisory Cancer Council to carry on research on the endocrine relationships of cancer, received the doctor of philosophy degree from the University of Chicago in 1932, aged 34, died in Keyport, July 11, of a compound fracture of the skull and other injuries received when he fell from the mast of a boat.

William Bean Anderson ♂ Brownwood, Texas, Vanderbilt University School of Medicine, Nashville, Tenn., 1888, Medical Department of Tulane University of Louisiana, New Orleans, 1894, one of the organizers and twice president of the Fourth District Medical Society of the State Medical Association of Texas, member of the American Academy of Ophthalmology and Otolaryngology, a charter member of the Texas Society of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, a founder, director and chief of the eye, ear, nose and throat department of the Medical Arts Hospital, served for many years as trustee of the Howard Payne College, aged 80, died, July 6, of coronary thrombosis.

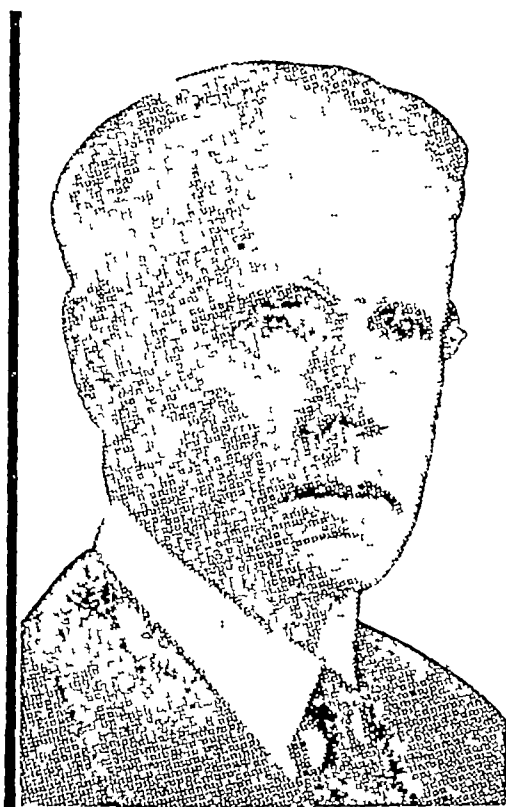
Donald Cole Barber ♂ Grafton Ohio, George Washington University School of Medicine, Washington D. C., 1930, served overseas during World

War I and was given several citations, including the Croix de Guerre from the French government and the Silver Star, first lieutenant in the medical reserve corps of the U. S. Army not on active duty, aged 42, died, August 13, of coronary thrombosis.

George L. Barr, Owensboro, Ky., Hospital College of Medicine, Louisville, 1898, member of the Kentucky State Medical Association, on the consulting staff and for sixteen years a member of the board of trustees of the Owensboro City Hospital, now known as the Owensboro-Daviess County Hospital, aged 72, died, August 4, of prostatic hypertrophy.

Samuel Cushing Beach, Chicago, Rush Medical College, Chicago, 1892, consultant and industrial medical inspector, division of industrial hygiene, Illinois Department of Public Health, division surgeon of the Chicago, Burlington and Quincy Railroad at McCook, Neb., and the Illinois Central Railroad, aged 73, died, July 31, of complications following a fractured hip received in a fall.

Francis Everett Bedinger ♂ Walton, Ky., Creighton University School of Medicine, Omaha, 1932, commissioned a first lieutenant in the medical reserve corps of the U. S. Army in October 1939, physically incapacitated for active duty and relieved from active duty in December 1941, aged 38, died August 2, of Hodgkin's disease.



LOUIS B. WILSON, M.D., 1866-1943

Edward Berninioni, Denver, Regia Università degli Studi di Firenze Facoltà di Medicina e Chirurgia, Italy, 1889, aged 78 died in the Mercy Hospital, August 4, following an operation on the prostate gland

S Price Blackwood, Corning, Ark (licensed in Arkansas in 1907), aged 57, died, August 1, of pneumonia

George G Douglas, Elmwood, Neb, Missouri Medical College, St Louis 1891, aged 80, died, July 16, of heart disease

Yervant S Elmadjian, Boston American University of Beirut School of Medicine, Syria, 1914, aged 60, died, June 12, of coronary occlusion

William Kellogg Foote, Omaha, Chicago Homeopathic Medical College, 1893, aged 72, died, July 22

Daniel Reid Gunn, Memphis, Tenn, Memphis Hospital Medical College, 1910, aged 56, died, July 17, of cirrhosis of the liver

Thorne Sanford Harris, Shenandoah, Pa, University of Pennsylvania School of Medicine, Philadelphia, 1927, assistant surgeon on the staff at the Locust Mountain State Hospital, aged 44, died in St Luke's and Children's Medical Center, Philadelphia July 26

Notley William Hawkins Farmington, Mo., Washington University School of Medicine St Louis, 1926 specialist certified by the American Board of Otolaryngology served on the staff of the Bonne Terre Hospital aged 42 died in the Barnes Hospital, St Louis, July 27, of brain tumor

Samuel Edward Hudson Austin Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1886, on the staff of the Seton Infirmary, now known as the Seton Hospital consulting physician to the Southern Pacific Railroad, aged 82 died in the Brackenridge Hospital, July 1, of coronary occlusion

George M Jones, Springtown Texas (licensed in Texas under the Act of 1907), aged 76 died, July 15, of heart disease and diabetes mellitus

Vincent J Keating Los Angeles, Chicago College of Medicine and Surgery, 1909, past president of the Wyoming State Medical Society and the Sheridan County Medical Society, member of the medical board of the retirement fund of the city board of education on the staffs of the Queen of Angels Hospital and St. Vincent's Hospital, where he died, July 3, of atelectasis of the lungs following an operation for acute appendicitis, aged 58

Harry Lloyd McCarthy Los Angeles, University of Pennsylvania School of Medicine, Philadelphia, 1910 served on the staff of St Vincent's Hospital aged 64 died, July 26, of heart disease

Mark Allen Newland, Center Point, Iowa State University of Iowa College of Homeopathic Medicine, Iowa City, 1892, member of the Iowa State Medical Society, aged 73, died July 27, of arteriosclerosis

Huger Richardson, Loris, S C, Medical College of the State of South Carolina, Charleston, 1910, trustee of schools, aged 59, died, July 27, of heart disease

Daniel Scott Schenck, La Jara, Colo Jefferson Medical College of Philadelphia, 1903 aged 61 died suddenly, July 1, of heart disease

Charles Robert Starkweather, West Cummington, Mass, College of Physicians and Surgeons New York, 1882 justice of the peace and member of the board of health, aged 95, died, June 18 of senility

Henrik Tillsch, Brookings, S D Northwestern University Medical School, Chicago, 1901, member of the South Dakota State Medical Association senior member of the Brookings Clinic, president of the hospital board of directors of the Brookings Municipal Hospital since 1930 head of the student health service at the South Dakota State College of Agriculture and Mechanic Arts aged 65, died June 20, of coronary thrombosis

Emil S Tobie, Buffalo Université de Paris Faculté de médecine France 1888 member of the Medical Society of the State of New York for many years on the staff of the Buffalo Hospital of the Sisters of Charity and the Deaconess Hospital, aged 80 died, July 1 of pneumonia and myocardial failure.

Harvey Ainsworth Tyler Chicago Rush Medical College Chicago 1889 at one time instructor of gynecology and obstetrics at his alma mater formerly professor of gynecology at the Chicago Polyclinic served as consultant to the women's department of the House of Correction and as medical director of the House of the Good Shepherd aged 74, died July 3 of blood stasis

Robert A Van Allan, Rochester, N Y, Pulte Medical College Cincinnati, 1885, died, July 8, of chronic nephritis, arteriosclerosis and chronic myocarditis

Dell Williamson Van Gilder, Cuyahoga Falls, Ohio, Rush Medical College, Chicago, 1900, veteran of the Spanish-American War and World War I, served on the staffs of St Luke's and St Anthony's hospitals, Denver, aged 65, died, July 14, of heart disease

Allison Moore Van Horn, Sea Breeze, N Y, Eclectic Medical Institute, Cincinnati, 1905 member of the Medical Society of the State of New York aged 60, died, June 6, of terminal bronchopneumonia, hypertensive cardiovascular disease and diverticulitis of the sigmoid with pelvic abscess

James Heber Varnum, Benton Ridge, Ohio, Western Reserve University Medical Department, Cleveland, 1893 member of the Ohio State Medical Association, member of the board of education, aged 74, died, June 30, of arteriosclerosis

John Dillon Wakefield, Cincinnati Miami Medical College, Cincinnati 1893, served in the medical corps of the U S Army during World War I, for many years medical examiner for the Veterans Administration, aged 74 died, July 17, of cerebral hemorrhage

Frank Alfred Walsh, Erie, Pa, Jefferson Medical College of Philadelphia, 1895, member of the Medical Society of the State of Pennsylvania, fellow of the American College of Surgeons, past president of the Erie County Medical Society served on the staff of the Hamot Hospital and for many years on the staff of St Vincent's Hospital, aged 76 died, July 29, of coronary thrombosis

Henry Smith Williams, Los Angeles, Chicago Medical College, 1884, assistant physician and pathologist to the State Hospital, Independence Iowa, 1887 assistant physician at the Manhattan State Hospital, New York, in 1888 and the Bloomington Asylum, New York in 1889 at one time medical superintendent of the Randall's Island (N Y) Hospitals author of numerous books, editor of 'Historians History of the World' in twenty-five volumes and 'Works of Luther Burbank' in twelve volumes, aged 80, died July 4, of arteriosclerosis

Will Reese Williams, Richlands Va Medical College of Virginia, Richmond, 1897 member of the Medical Society of Virginia, a member of the state board of Health, a director and first vice president of the Merchants and Farmers Bank, established in 1906, and the first and only president of its successor, the First National Bank first president of the Richlands Rotary Club and for many years served on the town council founder of the Grundy Hospital and the Mattie Williams Hospital, where he died, July 17, of uremia, aged 70

Pearl C Wray Breckenridge, Texas Gate City Medical College, Texarkana Ark, 1906 formerly assistant health officer of Fort Worth and health officer of Kent County for many years health officer of Breckenridge and physician for the Breckenridge High School football team president of the Kent County Draft Board during World War I recently medical examiner for the Selective Service Board aged 65, died at a Fort Worth hospital, June 8, of heart disease

DIED WHILE IN MILITARY SERVICE

Edgar Fremont Haines Lieutenant Colonel, M C U S Army, Chelsea, Mass Boston University School of Medicine, 1906, U S Army Medical School in 1933 commissioned a first lieutenant in the medical reserve corps of the U S Army in August 1909 and appointed a first lieutenant in the medical corps of the regular Army in August 1917 rose through the various grades to that of lieutenant colonel in April 1937 at one time professor of military medicine at the Boston University School of Medicine member of the American College of Physicians aged 60, died in the Tilton Hospital Fort Dix, N J July 22, of adenocarcinoma of the sigmoid

Edward Henry Herbert Old Medical Director Captain, U S Navy retired Charleston S C University of Virginia Department of Medicine Charlottesville, 1899, entered the U S Navy in September 1905 and retired in October 1940 retained on active duty as district medical officer of the Sixth Naval District commanding officer of the U S S Solace a hospital ship in World War I, and was awarded the Navy Cross for outstanding performance of duty fellow of the American College of Surgeons aged 66 died in the United States Naval Hospital July 1 of adenocarcinoma of the splenic flexure of the colon

Correspondence

HAIR LACQUER DERMATITIS

To the Editor—I was about to mail you a report on 4 patients with hair lacquer dermatitis of the neck, ears and face when I saw the notice in this morning's Philadelphia *Inquirer* that your office is aware of this condition. All these patients were seen within one month. Patch tests were positive in two of my patients.

The hair lacquer in all 4 of my patients was "Hubere's," and two of the largest department stores here, Wanamaker's and Strawbridge & Clothier's, with whom I have been in contact, have removed this particular hair lacquer from sales.

I am awaiting a chemical analysis of the substance to send you a fuller report.

SIGMUND S. GEFENBAUM, M.D., Philadelphia

CUTANEOUS ERUPTIONS FOLLOWING TOPICAL AND ORAL SULFATHIAZOLE

To the Editor—Dermatitis following local application of sulfathiazole has been the subject of four recent reports appearing in THE JOURNAL.

Livingood C. S., and Pillsbury, D. M. Sulfathiazole in Eczematous Pyoderma. Sensitization Reaction to Successive Local and Oral Therapy, Report of Twelve Cases, Feb. 6, 1943, p. 406.

Cohen, M. H., Thomas, H. B., and Kalisch, A. C. Hypersensitivity Produced by the Topical Application of Sulfathiazole. Feb. 6, 1943, p. 408.

Weiner, A. L. Cutaneous Hypersensitivity to Topical Application of Sulfathiazole. Feb. 6, 1943, p. 411.

Shaffer, Bertram, Lentz, J. W., and McGuire, J. A. Sulfathiazole Eruptions. Sensitivity Induced by Local Therapy and Elicited by Oral Medication. Sept. 4, 1943, p. 17.

The authors have variously interpreted these phenomena either as contact dermatitis (dermatitis venenata) resulting from exogenous cutaneous hypersensitivity or as dermatitis medicamentosa resulting from absorption and endogenous hypersensitivity. It is also known that an individual may be sensitive to sulfathiazole in both of these respects and therefore that the two phenomena may be observed in the same individual. The matter is further complicated since sulfathiazole eruptions rather frequently follow oral administration of the drug and since local application may sensitize an individual to subsequent oral or parenteral administration. In such instances there need not necessarily have been a dermatitis at the time of the original topical application, but if this has been present the dermatitis following ingestion of the drug may appear initially and more severely in the formerly affected sites. Finally, attention has been called to the tendency of sulfathiazole eruptions so induced to mimic the preexisting dermatosis for which treatment was initially intended.

It follows that contact dermatitis from topical application of sulfathiazole can be established by means of patch testing. In dermatitis medicamentosa following oral administration or following absorption from topical application one would expect to find negative patch tests but positive passive transfer reactions (Prausnitz-Kustner). This was recently demonstrated in an article by Shaffer, Lentz and McGuire.

This dual ability of sulfathiazole to cause both dermatitis venenata and dermatitis medicamentosa either from ingestion or from cutaneous absorption is by no means unique. It is seen also with quinine and mercury and other drugs employed therapeutically by ingestion or injection and by local cutaneous application.

It is my opinion that physicians other than dermatologists may not have a clear understanding of the several mechanisms involved in the production of sulfathiazole eruptions by local

and oral administration. The various clinical reports have failed to emphasize these differences. The popularity of sulfathiazole therapy indicates that a clearer conception of the aforementioned processes might be of value in the management of and prevention of recurrence of cutaneous hypersensitivity to sulfathiazole.

ALFRED L. WEINER, M.D., Cincinnati
Assistant, Department of Dermatology, University
of Cincinnati College of Medicine

SOUTH CAROLINA MEDICAL STUDENTS ON THE WAGNER-MURRAY- DINGELL BILL

To the Editor—The students of the Medical College of the State of South Carolina in discussing the Wagner-Murray-Dingell bill have decided that it is a treacherous piece of legislation and that it would not only shackle the medical profession but lead to totalitarianism.

A meeting of the student body was called on August 13, at which time the following resolution was unanimously adopted: "We, the medical students of the Medical College of the State of South Carolina, assembled for the purpose of discussing the Wagner-Murray-Dingell bill (U. S. Senate bill No. 1161) now introduced in congress, are alarmed at the obvious intention to establish state operation of medical services in such a totalitarian fashion under the sole direction of one person."

A committee to outline and initiate action against the bill was formed and immediately began to function. Brief outlines of the bill were written together with letters to be sent to the families and friends of the students informing them of the contents of the bill and urging them to write their congressmen about it. Articles were written to the newspapers of this area for publication, and conspicuous cooperation was received from the editors. To this method of publicity were added several radio speeches by prominent men. Every medical college in the country was informed of our intent and actions. Pleasingly enough, those replies we have received were in full accord with our views.

The efforts of the students came to the attention of the Army and Navy authorities, who immediately ordered the members of the armed forces taking part to cease, as no member of the armed forces is allowed to participate in any activity which has to do with government policy. This order resulted in the cessation of a great deal of the activity on the part of the students, since the vast majority are members of the armed forces, however, those of us who still retain civilian status are going ahead with the original program.

The efforts we made toward publicizing this bill have met with a great deal of success. The editors of the newspapers here and over the rest of the state have become interested and carried on with spontaneous editorials. The radio presentations were accepted by the public with enthusiasm, and the interest of the public manifested itself through letters to their congressmen and to the editors of the various papers, all letters have been in accord with our views. Even the clergy in this area have contributed in this manner.

These procedures have brought excellent results. The congressmen of this area have publicized their opposition to the bill and stated that they will not only vote against it but will do all in their power to prevent it from reaching the floor of Congress.

We believe that our actions have been to some degree responsible for these results, we urge that similar action be taken by the profession and other civilian medical students.

BENJAMIN J. STEINBERG,
105 Rutledge Avenue,
Charleston 16, S. C.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Oct 9 page 376

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery June 20 22 Sec. Dr B F Austin 519 Dexter Ave Montgomery

ARKANSAS * Medical Nov 3-4 Sec Dr D L Owens Harrison. Eclectic Little Rock Nov 4 Sec. C H Young 1415 Main St Little Rock

CALIFORNIA * Written Sacramento Oct. 18 21 Sec Dr Frederick N Scatena 1020 N Street Sacramento

CONNECTICUT * Written Hartford Nov 9 10 Endorsement New Haven Nov 23 Sec to the Board Dr Creighton Barker 258 Church St New Haven Homeopathic Derby Nov 9 Sec Dr Joseph H Evans 1488 Chapel St. New Haven

DELAWARE * Written Dover Jan 11 13 Endorsement Dover Jan. 18 Sec. Medical Council of Delaware Dr Joseph S McDaniel 229 S State St. Dover

DISTRICT OF COLUMBIA * Washington Nov 8 9 Sec Commission on Licensure Dr G C. Ruhland, 6150 E Municipal Bldg Washington

FLORIDA * Jacksonville Nov 22 23 Sec. Dr William M Rowlett Box 786, Tampa.

GEORGIA October or November Sec State Examining Boards Mr R C Coleman 111 State Capitol Atlanta

IDAHO Boise Jan 11 Dir Bureau of Occupational Licenses Mrs Lela D Painter 355 State Capitol Bldg Boise

IOWA * Iowa City Dec. 27 29 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg, Des Moines.

KANSAS Kansas City Feb 23 Sec. Dr J F Hassig 905 N Seventh St Kansas City

KENTUCKY Louisville Dec. 6-8 Sec Dr Philip E Blackerby 620 S Third St. Louisville

MAINE Portland Nov 9 10 Sec. Dr Adam P Leighton 192 State St. Portland

MARYLAND Medical Baltimore Dec 14 17 Sec. Dr J T O Mara 1215 Cathedral St. Baltimore Homeopathic Baltimore Dec 14 15 Sec Dr J A Evans 612 W 40th St. Baltimore.

MASSACHUSETTS Boston Nov 16-19 Sec Board of Registration in Medicine Dr H Q Gallupe 413 F State House Boston

MINNESOTA * Minneapolis Oct 19 21 Sec. Dr J F DuBois 230 Lowry Medical Arts Bldg St Paul

MISSOURI St Louis Nov 15 17 Sec State Board of Health Dr James Stewart State Capitol Bldg Jefferson City

NEVADA Endorsement Carson City Nov 1 Sec. Dr G H Ross 215 Carson St. Carson City

NEW JERSEY Trenton Oct. 19 20 Sec Dr E S Hallinger 28 W State St. Trenton.

NORTH DAKOTA Grand Forks Jan 4 7 Sec Dr G M Williamson 4 1/2 S Third St Grand Forks

OHIO Written Columbus Dec. 4 Sec. Dr H M Platter 21 W Broad St. Columbus

OKLAHOMA * Oklahoma City Dec. 27 29 Sec. Dr J D Osborn Jr Frederick.

OREGON * Endorsement Portland Oct 23 Exec. Sec Miss Lorraine M Conlee 608 Failing Bldg Portland.

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SOUTH CAROLINA Charleston Dec. 20 22 Sec. Dr N B Heyward 1329 Blanding St. Columbia

SOUTH DAKOTA * Pierre Jan 18 19 Dir Medical Licensure State Board of Health Dr Gilbert Cottam Pierre

VERMONT Burlington Dec 16-18 Sec Dr F J Lawless Richford

VIRGINIA Richmond Dec 14 17 Sec Dr J W Preston 30 1/2 Franklin Road Roanoke

WEST VIRGINIA Charleston Oct 25 27 Commissioner Public Health Council Dr John E Offner State Capitol Charleston

WISCONSIN Madison Dec 13 15 Sec Dr C A Dawson Tremont Bldg River Falls

Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Taxes Hospital Service Plan Corporation Not a Corporation Organized and Operated Exclusively for Charitable Purposes—The Associated Hospital Service Corporation of Massachusetts was incorporated under a Massachusetts statute authorizing the organization and operation of "corporations for the purpose of operating a nonprofit hospital service plan whereby hospital care may be provided for subscribers to the plan under contracts which entitle subscribers to certain hospital care." The corporation entered into contracts with subscribers which entitled them on the payment to the corporation of a specified annual subscription fee stated hospital care when necessary, to be rendered by so-called hospital participating members of the corporation. The corporation in turn agreed to pay the hospitals rendering that care on a specified scale. If there was a deficiency in any one year subscribers were not to be assessed to meet the deficiency but the participating hospital members were to suffer a pro rata deduction in payments to be made them during the ensuing year. The corporation brought suit in the district court of the United States for the district of Massachusetts against the local collector of internal revenue to recover taxes paid by it under protest alleged by the collector to be due under the taxing provisions of the federal social security act. The taxing provisions of the federal social security act specifically exempt from the payment of those taxes 'a corporation organized and operated exclusively for charitable purposes no part of the net earnings of which inures to the benefit of any private shareholder or individual.' The corporation claimed that it was such a corporation and consequently was exempt from the payment of those taxes. From a judgment in favor of the corporation the collector appealed to the circuit court of appeals, first circuit.

If, said the circuit court of appeals the plaintiff corporation is a corporation organized and operated exclusively for charitable purposes it is exempt from the tax provisions of the social security act. The plaintiff corporation maintains that it is such a corporation since its object is the promotion of health its deficiencies are not assessed on subscribers nor its earnings divided among them, any surplus created is to be used to reduce rates or increase services in the future and the principal officers of the corporation serve without compensation. We cannot accept the plaintiff's argument. In our opinion the corporation is being conducted more on a business than on a charitable basis. The payment of a fee is a prerequisite to the receipt of benefits and the relationship existing between the corporation and the subscriber is contractual. The subscribers consider themselves neither charitable donors nor the recipients of charity. The corporate capital is not composed of charitable contributions but of fees exacted from subscribers. Without the subscription payments the corporation could not function. Membership is not limited to the needy but as a matter of fact is composed largely of the middle class and well-to-do. It is difficult to distinguish the plaintiff corporation from a mutual insurance company or an employee benefit plan. Here we

have what is essentially a business arrangement under which a group of people have banded themselves together to purchase at rates as low as possible hospital care in the event of sickness or accident. These rates are subject to approval by the Massachusetts Commissioner of Insurance. Such a corporation is not charitable. While the charging of fees does not necessarily render an institution noncharitable, still the plaintiff corporation exacts a fee as prerequisite to the receipt of benefits in every case. This is not true of the ordinary charitable organization. Many charitable educational institutions charge fees, but they do not require payment in every case and ordinarily the fee bears no precise relation to the cost of the benefit conferred.

The plaintiff contended that it was different from the ordinary mutual insurance company in that it does not make assessments on its subscribers for the payment of deficiencies nor does it divide any surplus among them by way of dividends. The fact, answered the court, that it meets deficiencies out of future subscription fees and uses its surplus to reduce rates or increase services for future members is not sufficient to make the plaintiff a charity. The mutual insurance company retains at least some of its surplus for the benefit of future members. This partial retention of surplus does not render a mutual insurance company a charitable organization. The mere fact that the plaintiff retains its entire surplus for the benefit of future members is not sufficient to make the organization a charitable one. The plaintiff further contended that the main distinction between it and a mutual insurance company is that any surplus which the plaintiff may have on liquidation must be devoted to some charitable purpose, whereas the surplus of a mutual insurance company on liquidation will be divided among the members of the company. This, said the court, is not enough to make the plaintiff charitable. It is extremely unlikely that there will ever be any surplus to liquidate. So long as the corporation is successful it will continue to operate. If it is not successful there will be no surplus. We do not feel that a corporation should be classified as a charity on the basis of a contingency unlikely to happen. Moreover, the subscribers responsible for the creation of the surplus do not act out of any charitable motive but pay their subscriptions solely on a business basis with full knowledge that if there is any surplus in a particular year they can become members in the following year and get the benefit of the reduced rates or increased services resulting from the surplus.

That Congress did not intend organizations similar to the plaintiff to be considered corporations organized and operated exclusively for charitable purposes, continued the court, is borne out by a careful examination of the statutes. The subsections of the social security act the construction of which are here involved are exactly the same as subsection 6 of section 101 of the internal revenue code, which exempts such corporations, among others, from income taxation. The exempting section of the income tax law, however, differs from the exempting sections of the social security act in one important respect. In addition to the exemption granted to corporations organized and operated exclusively for charitable purposes, the income tax law in other subsections of section 101 also grants exemptions to certain types of mutual savings banks, fraternal beneficial societies, cooperative building and loan associations and banks, cooperative cemetery companies, voluntary employees' beneficial associations and a number of other similar organizations. Not one of these specific exemptions is contained in the social security act. The fact that Congress specifically mentioned these organizations, even though the statute contained the exemption granted to corporations organized and operated exclusively for charitable purposes, would seem to indicate that Congress did not consider these organizations specifically mentioned to be within the scope of a charitable organization. Since the plaintiff closely resembles many of the organizations specifically exempted, Congress could not have intended it to fall within the scope of a corporation organized and operated exclusively for charitable purposes.

The Massachusetts statute authorizing the formation of corporations such as the plaintiff describes the corporation as "charitable and benevolent" and exempts it from taxation. An act was passed also in the District of Columbia by the Congress authorizing the organization of similar corporations in the District and exempting them from taxation as "charitable and benevolent." The plaintiff relied on these two statutory designations as binding with respect to classifications for the payment of federal taxes. But, said the court, it appears to be clear that both the Massachusetts legislature and Congress were desirous of exempting such organizations from local taxation even though they felt that these organizations were not charitable in the ordinary sense. If they were charitable organizations in the accepted meaning, there would have been no need by statute to describe them as charitable and specifically to exempt them from taxation. The Massachusetts statute designating the plaintiff corporation as a "charitable and benevolent" corporation is important here so far as it affects the rights, duties and powers of the plaintiff corporation. We consider the characteristics of the plaintiff as established by state law, particularly its power with respect to surplus. Beyond that, state nomenclature is not binding on us. As was said by the Supreme Court of the United States in *Morgan v Commissioner*, 1940, 309 U S 78, 60 S Ct 424.

State law creates legal interests and rights. The federal revenue acts designate what interests or rights, so created shall be taxed. Our duty is to ascertain the meaning of the words used to specify the thing taxed. If it is found in a given case that an interest or right created by local law was the object intended to be taxed, the federal law must prevail no matter what name is given to the interest or right by state law.

We have concluded that the plaintiff corporation has not the characteristics of a charitable organization in the ordinary meaning of the term. The fact that the Massachusetts law labels it a charity and that Congress labels a similar plan in the District of Columbia a charity would also seem to be unimportant.

The judgment of the district court in favor of the plaintiff corporation was reversed and the cause remanded—*Hassett, Former Acting Collector of Internal Revenue, v Associated Hospital Service Corporation of Massachusetts*, 125 F (2d) 611 (1942).

Society Proceedings

COMING MEETINGS

- Aero Medical Association of the United States, Cincinnati, Ohio Oct 26-27 Dr David S Brachman, 5440 Cass Ave., Detroit, Secretary
- American Society of Anesthetists, New York, Dec 9 Dr McKinnie L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary
- Association of American Medical Colleges, Cleveland Oct 25-27 Dr Fred C Zapfee, 5 South Wabash Ave., Chicago, Secretary
- Association of Military Surgeons of the United States, Philadelphia, Oct 21-23 Colonel James M Phalen, Army Medical Museum, Washington, D C Secretary
- Inter State Postgraduate Medical Association of North America, Chicago Oct 26-29 Dr Arthur G Sullivan, 16 North Carroll St., Madison Wis Managing Director
- Oklahoma City Clinical Society, Oklahoma City, Oct 18-21 Dr Clark H Hall, 117 North Broadway, Oklahoma City, Secretary
- Omaha Mid West Clinical Society, Omaha, Oct. 25-29 Dr J D McCarthy, 1036 Medical Arts Bldg Omaha, Secretary
- Pacific Coast Society of Obstetrics and Gynecology, San Francisco, Nov 4-5 Dr T Floyd Bell, 431 Thirtieth St., Oakland, Calif., Secretary
- Radiological Society of North America Chicago, Nov 29-Dec 3 Dr Donald S Childs, 607 Medical Arts Bldg., Syracuse, N Y, Secretary
- Seaboard Medical Association, Richmond Va., Nov 30-Dec 2 Dr Clarence P Jones, 3117 West Avenue, Newport News, Va., Secretary
- Southern Surgical Association, New Orleans, Dec. 7-9 Dr Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary
- Southern Medical Association Cincinnati, November 16-18 Mr C P Loran, Empire Building, Birmingham, Alabama Secretary
- Virginia, Medical Society of, Roanoke Oct 25-27 Miss Agnes V Edwards, 1200 East Clay St Richmond Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

Alabama State Medical Assn Journal, Montgomery

13 1-64 (July) 1943

- Perforating Peptic Ulcer J E Cameron—p 1
Infants and Overfeeding M G Neely—p 4
Venereal Disease Problem in Alabama W H Y Smith—p 7
The Wounded Must Not Die. Marguerite Wales—p 9

American J Digestive Diseases, Fort Wayne, Ind

10 283-318 (Aug) 1943

- *Experimental Production of Gastric Ulcers in Dogs by Inducing Vascular Spasm with Pitressin. A J Nedzel—p 283
Low Incidence of Cancer of Stomach in Iowa. F W Mulsow—p 297
Study of Significance and Accuracy of Cholecystographic Findings. A. M. Serby and G. M. Lichtenstein—p 300
Abdominal Puncture—Its Value in Differential Diagnosis Between Coronary Closure and Perforated Abdominal Viscus I Kross—p 301
Effect of Potassium and of Cardiac Glucosides on Vagus Reactions of Heart and Stomach of Turtle Dorothy Fetter Helen C Coombs and F H Pike—p 303
Motor Changes Observed Fluoroscopically in Colon of Patient Afflicted with Tumor in Hypothalamic Region. A. Mayoral—p 305
Gastric Secretion and Sugar Metabolism. C L Glaessner—p 307

Experimental Production of Gastric Ulcers with Pitressin.—Nedzel injected into young dogs intravenously 20 pressor units of pitressin for every 5 kilograms of body weight. His observations pointed to a conditioning of the blood vessels as the immediate cause of ulcer formation. Pitressin injected intravenously provokes a spasm of the small blood vessels as well as a spasm of the muscular tissues, which in their turn add to the compression of the blood vessels. The contraction is later followed by dilatation of the same blood vessels. A normal biologic rhythm of this type keeps the vascular supply and demand in constant equilibrium, but the same contraction whether due to changes in the blood vessels or to contraction of the extrinsic muscles, if prolonged or exaggerated, injures the parenchymal cells, because it will be associated with undue general or local anoxia. The greater the discrepancy between the demand for oxygen and the supply, the greater the changes which will follow. With the pressor phase as it occurs under natural conditions of life (e. g. with cold, with relative alkalosis, with sympathicotonia) or after injections of pitressin, contractions of the blood vessels occur which may reach such a degree that a vessel may rupture and establish a hemorrhage directly into the stomach. Small hemorrhages and foci of necrosis can be observed in the mucosa and dilated blood vessels in the submucosal and muscular layers. An exudate containing fibrin and formed elements which have passed through the undamaged epithelial layer may collect on the surface of the mucosa. Erosions, edema of the wall of the stomach, necrosis of the mucosa associated with an increased number of mononuclear cells healing of the erosions and ultimately typical ulcer formation may be discerned. Persons subject to ulcer formation are usually asthenic with labile nervous and vascular systems. The disease is seasonal and occurs mostly in the northern latitudes. It is likely that during the late winter and spring there is a greater tendency toward inflammatory reaction and toward digestion of tissue. Animals which have been fatigued and are more acid, and thus biologically weaker, evince greater autonomic difficulty in adjustment to meteorologic changes, and in them superimposed pressor effects from injections of pitressin apparently lead more readily to prolonged spasm and to delayed recovery from the effect of spasm.

American Journal of Public Health, New York

33 925-1042 (Aug) 1943

- National Board of Health 1879-1883 W G Smillie—p 925
Preventive Medicine Program of United States Army J S Simmons—p 931
Home Drying Methods and Their Effect on Palatability Cooking Quality and Nutritive Value of Foods Esther L Batchelder—p 941
Blood and Malaria Parasite Staining with Eosin Azure Methylene Blue Methods R D Lillie—p 948
Radio Listening Habits of Mothers Who Attend Well Baby Clinics Margaret L Murray and C E Turner—p 952
Surveys of Nutrition of Populations 2 Protein Nutrition of Rural Population in Middle Tennessee J B Youmans, E. W. Patton W R Sutton Ruth Kern and Ruth Steinkamp—p 955
Field Experience for Health Education Personnel Minnie Krueger Oed—p 965
Dehydration Procedures and Their Effect on Vitamin Retention. R S Hollingshead—p 969
*Losses of Vitamins Which May Occur During Storage of Dehydrated Vegetables D K Tressler J C Moyer and Katherine A Wheeler—p 975
Ultraviolet Irradiation as Means of Disinfection of Air A Hollaender—p 980
Health Education in Medium Urban Community E G Brown—p 985

Losses of Vitamin During Storage of Dehydrated Vegetables.—Tressler and his associates studied the carotene, thiamine and ascorbic acid contents of rutabagas, beets, cabbage and potatoes during commercial dehydration and subsequent storage under controlled conditions. Prior to storage the dehydrated vegetables were packaged (1) in glass containers, (2) under carbon dioxide in glass containers or (3) in either moisture proof cellophane or phlofilm bags. Storage temperatures employed were —40, 33, 58 and 75 F. Little carotene was lost from any of the vegetables during dehydration, but the loss of this vitamin was relatively rapid at all storage temperatures above —40 F. Storage under carbon dioxide helped to prevent rapid loss. Some thiamine is dissolved out during hot water blanching. Subsequent storage caused no further loss. Potatoes lost nearly all of their ascorbic acid content during blanching in hot water and subsequent dehydration. The fresh beets contained a relatively small amount of ascorbic acid. About one third of this was lost during precooking and subsequent dehydration. The resultant product was not a good source of vitamin C. Rutabagas lost approximately 85 per cent of their ascorbic acid during water blanching and dehydration. The remainder was fairly well retained at the lower storage temperatures but at either 58 or 75 F more than half is lost in four months. Storage under carbon dioxide had little effect in retarding the rate of loss during storage. Cabbage retained its vitamin C content better than any other vegetable during dehydration and subsequent storage. That tested was high in vitamin C, containing more than 3 mg of ascorbic acid per gram of dehydrated cabbage.

Am J Roentgenol & Rad Therapy, Springfield, Ill

50 1-148 (July) 1943

- Effect of Heparinization on Experimental Postirradiation Tissue Changes in Lung Preliminary Study F Boys and I D Harris—p 1
Roentgen Diagnosis of Malignant Nasopharyngeal Tumors W G Belanger and C G Dyke—p 9
Enlargement of Ileocecal Valve R Golden—p 19
Sigmoiditis S L Casper—p 24
*Gastric Herniation at Esophageal Hiatus J W Turner—p 33
Liquefaction Necrosis in Bilateral Symmetrical Conglomerate Lesions of Anthracosis of Lung Report of Case B J McCloskey—p 42
Mitalization of Cardiovascular Silhouette in Posteroanterior Roentgenogram. R Shapiro—p 46
Esophageal Erosion from Pott's Abscess Report of Case. L D Van Antwerp—p 54
Anomaly of Cervical and Upper Dorsal Vertebrae (Klippel Feil Syndrome) Report of 2 Cases J B Hudson—p 57
Gargolism Report of 3 Probable Cases S Larson and J A Lichty Jr—p 61
Dosage System for Roentgen Therapy M R Camiel and I H Blatz—p 67
System of Tumor Dosage Records and Technique as Employed at Brooklyn Cancer Institute W E. Howes and L. Bernstein—p 76
Radiation Therapy in Cancer of Esophagus Analysis of 85 Cases Observed During Last Decade E A Pohle and R R Benson—p 89
Localization and Concentration of Staphylococcus Antitoxin Areas of Rabbit Skin Treated with Ultraviolet Radiation R H Rigdon—p 101

Gastric Herniation at Esophageal Hiatus.—In reviewing the incidence of hiatus hernia among 1,500 upper gastrointestinal examinations Turner found a frequency of 35 per cent. Hiatus hernia is least frequent in males and nulliparous females.

under 30 years of age. Most cases occur in well nourished persons past middle age. Like diverticulosis, gastric herniation at the esophageal hiatus may exist without symptoms but, like diverticulitis, it may assume great significance in certain cases. The decided difficulty which sometimes occurs in distinguishing this condition clinically from gallbladder disease and from coronary disease in particular contributes to its importance. The hematemesis and the type of pain are often clinically suggestive of cancer but not likely to be confused with peptic ulcer. Timely recognition of hiatus herniation may avoid a needless cardiac regimen or unnecessary surgical procedures. Estimation of a degree of gastric constriction which occurs at the hiatus, estimation of mobility of the stomach in relation to the hiatus and attention to the rugal pattern in the herniated portion of the stomach are of paramount importance. Mobility and the degree of constriction should be estimated because of the relation of incarceration and adhesions to symptoms. The observation of the barium filled stomach in the supine patient during the Muller effort (in which the patient inspires with closed passages after complete expiration) is suggested as an aid for study of functional caliber of the hiatus. Fluorographic and other methods of complete x-ray demonstration of mucosal pattern in the herniated portion of the stomach deserves more attention because of the association of mucosal congestion with symptoms. A broadly dilated esophageal hiatus with a freely mobile and distensible herniating portion of stomach and normal rugal pattern is least often connected with symptoms. Conversely, a portion of stomach persistently herniated at the hiatus with no mobility, limited distensibility and definite prominence of rugal pattern is most likely productive of symptoms. Large abdominal tumors or large accumulations of ascitic fluid or both may cause herniation of the stomach by increase in intra-abdominal pressure.

Am J Syphilis, Gonorrhea and Ven Dis, St Louis

27 393-524 (July) 1943

- Gonorrhea from Standpoint of Navy C S Stephenson, G W Mast and F W Reynolds—p 393
 Resumé of the Year's Research in Gonorrhea A Cohn—p 403
 Renaissance of Gonorrhea Control Program Address of President 1942 R A Vonderlehr—p 411
 Highlights in Diagnosis and Treatment of Gonorrhea in Women A Jacoby and H Kraff—p 415
 Management of Gonorrhea in Female R M Lewis—p 418
 *Primary Gonorrheal Cutaneous Infection E C Lowry and A G Franks—p 428
 Control of Venereal Diseases Among Industrial Workers O L Anderson—p 432
 Economy of Contact Investigation in Venereal Disease Control With Special Reference to Efficiency of Contact Tracing Visit N W Guthrie—p 439
 Effect of Prolonged Trypsinamide Therapy on Liver Function I Kopp and H C Solomon—p 445
 Problem of Treatment of Resistant Syphilis Value of Mapharsen (Arsenoxide) in Healing of Lesions H Beerman N R Ingraham Jr and H Pariser—p 460
 Oral Administration of Mapharsen in Treatment of Experimental Administration H Brown, J A Kolmer and Anna M Rule—p 480
 Toxicity and Therapeutic Effectiveness of Mapharsen by Intramuscular Administration H Brown, J A Kolmer and Anna M Rule—p 488
 Influence of Ammonium Chloride on Mobilization and Excretion of Bismuth H Brown, J A Kolmer and Anna M Rule—p 501

Primary Gonorrheal Cutaneous Infection—Lowry and Franks report the occurrence of an eruption on the shaft of the penis of a man aged 33 thirty-five days after exposure to a prostitute. The eruption was associated with pruritus and burning and was elevated, hard and papular. Later the hard lesions became soft and some pus oozed from them. After admission to the hospital a new lesion developed posterior to the existing eruption. There were four discrete lesions 0.5 cm in diameter involving the ventral portion of the midshaft of the penis. The Kahn and Wassermann tests were negative. Repeated darkfield examinations of the material from the lesions were negative for *Treponema pallidum*. No Ducrey organisms were found. Many gram negative intracellular diplococci morphologically consistent with gonococci were found on repeated examinations. Material from a pustule on the shaft of the

penis produced gonococci in pure culture. Local applications of boric acid solution dressings were applied to the lesions. A routine course of sulfathiazole therapy was ordered. Soaks of potassium permanganate (1:8,000), also 2 per cent urea solution and sulfathiazole powder, were used over an adequate period of time without obvious improvement. Gentian violet and scarlet red dyes were applied to the lesions without benefit. After all chemotherapy had failed, the Davis-Bovie coagulating current was used for the excision and cauterization of the pustular lesions. The treated areas healed slowly. This case is noteworthy because gonorrheal infection involving the skin of the penis in the absence of gonorrheal urethritis has not been previously reported.

American Review of Tuberculosis, New York

48 1-64 (July) 1943

- Types of Lung Diseases Encountered in an Army Camp M C Thomas—p 1
 Bronchiectasis Secondary to Pulmonary Tuberculosis A B Ralance and B Gerstl—p 8
 Congenital Tuberculosis Tuberculosis Studies in Offspring of Mother Guinea Pigs Heavily Infected Intravenously H J Corper and M L Cohn—p 25
 Action of Some Derivatives of 4,4'-Diaminodiphenylsulfone in Experimental Tuberculosis M I Smith, E W Emmart and E F Stohli—p 32
 Effect of Aromatic Iodine Compounds on Tubercle Bacillus A K Saz, F R Johnston, A Burger and F Bernheim—p 40

Annals of Internal Medicine, Lancaster, Pa

19 1-182 (July) 1943

- *Experiences Associated with Transfusion Unit in 700 Bed Hospital An Annual Survey of Over 3,500 Administrations of Blood and Plasma (Dried) L A Erf and H W Jones—p 1
 *Chronic Seasickness R S Schwab—p 28
 Occlusions of Abdominal Aorta Study of 16 Cases of Saddle Embolism and Thrombosis N E Reich—p 36
 *Significance of Joint Pains Caused by Sterile Streptococcus Toxin P S Rhoads and M L Afremow—p 60
 Duplicate Measurements of Circulation Time Made with Saccharin Method K H Esser and K Berliner—p 64
 *Gold Therapy in Rheumatoid Arthritis A E Price and B Leichtenritt—p 70
 Some Legal Aspects of Heart Disease and the Electrocardiogram J E F Riseman and H W Smith—p 81

Transfusion Unit in 700 Bed Hospital—Erf and Jones discuss the clinical experiences and the practical problems associated with the blood transfusion plasma unit of Jefferson Hospital for the year ended July 1, 1942. During this year 3,857 bottles of blood, each with approximately 500 cc, were withdrawn from 3,906 donors. "Out dated" bottles of blood, 1,177 in number, were centrifuged and the plasma removed. The plasma was frozen by the adtecac process. The blood transfusion unit issued 2,869 blood transfusions, 32 per cent of which were followed by reactions, and 695 plasma (dried) infusions, 0.14 per cent of which were followed by reactions. The reactions were classified as (1) chills without fever, (2) chills with fever, (3) urticaria and (4) incompatibilities. The pyrogenic reactions, or chills with fever, were most frequent. It is assumed that many of the pyrogenic reactions were due to circulating foreign proteins in the recipient. Since the percentage of reactions was much lower following plasma infusions, it must be assumed that the red blood cells of the transfused blood are the agents that react with the circulating foreign proteins of the recipient. Dried human plasma will ultimately be the agent universally used in shock. Concentrated plasma almost invariably causes hemodilution and a rise in blood pressure. When plasma must be given in fox holes, on a rolling battleship or ambulance or in civilian emergencies, long rubber tubes and drip bottles cannot be used conveniently. But four or five fold concentrated plasma obtained by injecting with a 50 cc syringe of 40 cc of distilled water into a vial containing 16 Gm of plasma (the amount present in a pint of blood) can be administered intravenously or intrasternally within a few minutes. The necessary equipment for the administration of concentrated plasma can be carried in a coat pocket and weighs only 1 pound. Concentrated plasma can be given to dehydrated patients without harm. Intraendothelial routes (intrasternal and the like) of administering blood or plasma have been life saving in the authors' experience.

Chronic Seasickness—Schwab examined 115 naval personnel with chronic seasickness severe enough to bring them to the hospital. He found that 50 per cent of these men showed abnormalities in the gastrointestinal tract. These were detected by barium fluoroscopy, which demonstrated (1) irritability of the pylorus and duodenum with a resulting pylorospasm, (2) increase in gastric secretion even with fasting, (3) some increase in the gastric rugae and (4) loss of peristalsis. These conditions persisted in some patients for three or four weeks, gradually becoming less pronounced and in 1 case nearly disappearing after three months. Different diagnoses mask the actual incidence of seasickness. The reason for this is that being seasick is considered as something of a weakness or a disgrace. Therefore medical officers and pharmacist's mates, out of kindness, will often give to the seasick sailor a diagnosis such as psychoneurosis, gastric neurosis, gastric ulcer, gastritis, headache, sinus disease, appendicitis or back strain. A large percentage of persons subject to seasickness show neurotic trends. A man with pronounced nausea, vertigo, headache, vomiting and apprehension and discouragement is not as able a man as his unaffected fellow. This difference in ability is not easy to measure, but it involves alertness, skill, temper, resistance to infection, cold, heat and immersion. The condition is not to be disregarded, since it has a definite military bearing. The situation is to try to keep out of the service those individuals suffering from chronic motion sickness in the past, and these can be picked by a questionnaire. Those found in the service should be sent to shore jobs if their abilities warrant their retention in the service.

Joint Pains Caused by Sterile Streptococcus Toxin.—Rhoads and Afremow investigated the health of a group of student nurses who had multiple joint pains as a reaction to one or more immunizing doses of scarlet fever toxin. They were considered particularly suitable subjects because they are frequently exposed to hemolytic streptococcus infections. During the years 1934 to 1940 a group numbering 181 was found to have reported this reaction. Their health records were carefully tabulated. An equal number of nurses who were similarly immunized but reported no joint pains as a reaction to the doses were chosen from the records of each year as a control group. The observations support the view that sensitiveness to a hemolytic streptococcus toxin is present in a high proportion of persons who have had rheumatic infections or who harbor chronic streptococcal infection which is not present in other persons. It is manifested by joint pains when streptococcus toxin is introduced into their tissues. Such persons appear to develop rheumatic disorders such as heart disease, polyarthritis and erythema nodosum more frequently than other persons not similarly sensitized.

Gold Therapy in Rheumatoid Arthritis—Price and Leichtenritt present an analysis of gold salt therapy in 101 roentgenologically studied cases of rheumatoid arthritis. For an evaluation of late results a follow-up study on 81 available subjects of this series is included. Gold sodium thiomalate (myochrysine) was used in 91 cases and gold thioglucose (solganol B oleosum) in 10. Gold sodium thiosulfate was used in 2 cases to complete courses started with myochrysine. The sodium thiomalate and thioglucose preparations were given intramuscularly, gold sodium thiosulfate intravenously. Gold is an effective remedy for the treatment of rheumatoid arthritis, aiding in the alleviation of joint symptoms and effecting rehabilitation in a significant percentage of patients. Aurotherapy should be limited to rheumatoid arthritis. It is most effective in the early stages of the disease. It is frequently effective in relieving pain and stiffness in advanced cases and is therefore worthy of a trial in these. Careful and repeated follow up observations should be made before drawing final conclusions, since there is a high incidence of relapse and remission in the natural course of rheumatoid arthritis. Gold is a toxic drug and should be used only by those having experience with it. The toxicity is probably the result of individual drug sensitivity rather than of intoxication caused by a heavy metal. The administration of 7 to 9 Gm. of a gold salt without the development of toxic reactions would tend to support this contention. The exact mode of action of the gold preparations is not known.

Annals of Surgery, Philadelphia

118 1-160 (July) 1943

- *Experiences with Battle Wounds of Head. R A Money and T Y Nelson—p 1
- *Communications Between Coronary Arteries Produced by Application of Inflammatory Agents to Surface of Heart. P Schult E Stanton and C S Beck—p 34
- Stab Wound of Heart. Case Report of Successful Suture. J P Bruckner—p 46
- Surgical Management of Solitary Cysts or Cystlike Structures of Pulmonary Origin. M D Tyson—p 50
- Spread of Carcinoma of Rectum. Invasion of Lymphatics, Veins and Nerves. P H Seefeld and J A Barger—p 76
- Cholelithiasis Cyst. Final Report of 2 Cases. W B Swartley—p 91
- Routine Cystic Duct Drainage Following Cholecystectomy. D Mac Donald—p 97
- Intestinal Obstruction Due to Gallstone. R L Nitkin and A Lesser—p 101
- Results of Gallbladder Surgery in Diabetes Mellitus. H E Eisele—p 107
- Absorbable Cotton Paper and Gauze (Oxidized Cellulose). Virginia Kneeland Frantz—p 116
- Use of Thrombin on Soluble Cellulose in Neurosurgery. Clinical Application. T J Putnam—p 127
- *Convulsions During General Anesthesia. Report of 12 Cases. B S Ray and V F Marshall—p 130
- Acute Postoperative Necrosis of Liver. Experimental Study. J E Sutton—p 149

Experiences with Battle Wounds of Head—Money and Nelson review observations on 78 cases of all types of head wounds which were treated between July and December 1942 during the fighting in the vicinity of El Alamein. The thoroughness of the initial examination and toilet of the wound is more important than the time factor, at least up to four days, as long as prophylactic sulfonamide therapy is maintained during the period of waiting. Surgeons with field surgical units must have a knowledge of neurosurgical technic and be provided with adequate facilities if this class of wound is to be correctly dealt with in forward areas. It is better to stabilize these facilities at a place where the patients can be held after operation, and so arrangements should be made to transport the patient back as rapidly as possible, preferably by air ambulance, to a special center. An alternative plan is the provision of a field surgical unit with operating theater and beds entirely on wheels which can keep pace with the advancing or retreating troops or be replaced by another similar unit when its accommodation is filled. The removal of indriven bone fragments and inorganic debris is more important than the extraction of metallic foreign bodies. Even minute missiles, making a small wound in the scalp and outer table of the skull, are likely to drive large comminuted pieces of the inner table deeply into the brain and cause more extensive damage than the size of the missile and the condition of the patient would indicate. Closure of the tear in the dura mater should be attempted in order to prevent the formation of hernia cerebri, cerebrospinal fluid fistula and aerocele. The actual concentration of sulfonamide in the cerebrospinal fluid of every patient varies with the same dosage and must be checked at frequent intervals by colorimetric methods to make sure an adequate concentration is being attained and maintained in case of intracranial infection.

Communications Between Coronary Arteries Produced by Inflammatory Agents—Schult and his collaborators proved experimentally that trauma applied to the surface of the heart brings about the development of communications between one coronary artery and another. The trauma was produced by abrasion of the surface of the heart. The authors attempted to find a substance which when applied to the heart produces the same effect. Various substances were introduced into the pericardial cavity of dogs through a small opening in the parietal pericardium, which was then tightly sutured. The pericardium was opened at the end of one, two and three weeks under surgical conditions. Inter coronary communications were determined by a special method. Among the substances investigated were croton oil, oil of santal, formaldehyde, acriflavine, typhoid vaccine, sodium morrhuate, sodium ricinoleate, iodized and chlorinated oil, tragacanth, magnesium silicate, silicon water glass, agar, cotton gauze, a mixture of honite, alcauronate and starch, dried human skin and asbestos. Silicate in the form of powdered asbestos produced the most favorable reaction. It

caused the development of new communications between one coronary artery and another, it reduced the mortality following ligation of a coronary artery, and it reduced the size of the infarct which develops after the coronary artery has been ligated. The application of asbestos to the surface of the heart is a safe surgical procedure in animals provided a dose of about 0.1 to 0.2 Gm is used rather than larger doses. Inflammatory agents used on the heart may not be without harmful side effects, and they should not be used indiscriminately.

Convulsions During General Anesthesia—Ray and Marshall report 12 cases in which convulsions occurred out of a total of about 75,000 subjected to general anesthesia during the past ten years at the New York Hospital. Convulsions occur in about 1 in 6,000 patients subjected to general anesthesia. The mortality rate is 25 per cent—too high to be the result of convulsions alone. The term "ether convulsions" is misleading, since the convulsions may occur during other types of general anesthesia. Most of the alleged causes of the convulsions are not of a nature to be alone or directly responsible, but most of them bear some relationship to the delivery, transportation and utilization of oxygen for tissue respiration, thus suggesting anoxia as the chief factor in precipitating the convulsions. Since the cells of the brain are more sensitive to anoxia, convulsions often appear before other signs, but when the convulsions do appear an advanced state of anoxia may already exist. The incidence of convulsions during anesthesia may be lowered by attention to the preparation of the patient for operation, to the proper administration of the anesthetic and to the contributing effects of the operation itself. When convulsions do occur it is advisable to discontinue the anesthetic, to terminate the operation as quickly as possible, to administer oxygen, to correct any unfavorable position on the operating table, to keep the airway open (bronchoscopic aspiration may be required in case of atelectasis), to give some form of soluble barbiturate intravenously to control the convulsions, such as sodium amytal, sodium phenobarbital or pentothal sodium, to replace blood or fluid loss, and to allay hyperthermia by sponging the body or irrigating the rectum with cold water. An oxygen tent provides the dual service of cooling and supplying adequate oxygen. There may be advantage in administering hypertonic dextrose solution intravenously, particularly to combat unrecognized hypoglycemia, and intravenous calcium gluconate or intramuscular parathyroid injection to correct calcium imbalance.

Archives of Ophthalmology, Chicago

30 167-290 (Aug.) 1943

Story of Asthenopia. Important Part Played by Philadelphia, What of the Present and the Future? W. B. Lancaster—p. 167.
Lymphomatoid Diseases Involving Eye and Its Adnexa. J. S. McGavie—p. 179.

Epinephrine Mydriasis. L. Hess—p. 194.

*Primary Tuberculosis of Conjunctiva. Olga Sitchevskaya and Margaret Sedam—p. 196.

*Keratoconjunctivitis Sicca. S. R. Gifford, I. Puntenney and J. Bellows—p. 207.

Primary Herpes Simplex Keratitis. Clinical and Experimental Study. E. Gallardo—p. 217.

Therapeutic Experiences with Corneal Ulcer Due to *Bacillus Pyocyaneus*. E. H. Brown—p. 221.

Achromatopsia. Report of 3 Cases. S. D. Lewis and J. Mandelbaum—p. 225.

*Thrombosis of Central Retinal Vein Treated Successfully with Heparin. Report of 2 Cases. C. M. Rosenthal and J. T. Guzek—p. 232.

Cholesteatoma of Orbit. G. M. Constans—p. 236.

Astigmatic Accommodation. M. W. Morgan Jr., Jack Mohnes and J. M. D. Olmsted—p. 247.

Angiomatosis Retinae. Report of Successful Treatment in 1 Case. P. M. Lewis—p. 250.

Mineral Constituents of Sclerosed Human Lenses. P. W. Salit—p. 255.

Paradoxical Esotropia During Cycloplegia. H. S. Sugar—p. 259.

Night Vision. W. J. Homes—p. 267.

Primary Tuberculosis of Conjunctiva—Sitchevskaya and Sedam report the occurrence of primary tuberculosis of the conjunctiva with complete recovery in a child 18 months old. The diagnosis of primary tuberculosis was made because (1) a lesion was not present in any other organ of the body, (2) the process was unilateral and (3) there was involvement of the preauricular and other regional lymph nodes, which according to Ranke is typical of the primary complex. The source of the

infection was not certain. Tubercle bacilli were found in the smear and culture of pus from the preauricular lymph node and in excised tissue from the conjunctival lesion. The taking of a specimen from the conjunctiva for biopsy apparently acted as a therapeutic measure, as the eye improved rapidly after the biopsy. The suppurated lymph nodes responded well to aspiration and several fractional doses of x-rays. The outcome was favorable, which is in accordance with the results obtained in the majority of cases reported in recent years.

Keratoconjunctivitis Sicca—Gifford and his associates observed during the past four years 49 patients with evidence of deficient lacrimation. They divide these patients into three groups. Group 1 comprised 16 patients showing a lacrimal deficiency with moistening of less than 15 mm on the Schirmer test after five minutes, but no corneal or associated changes. Group 2 contained 21 patients who showed fairly severe lacrimal deficiency with corneal and conjunctival changes of such a degree as to be visible only with the slit lamp and as a rule no associated signs. Group 3 comprised 12 patients showing the typical Sjogren syndrome, with almost no lacrimal secretion on Schirmer's test, pronounced corneal and conjunctival changes, and one or more of the extraocular signs of that syndrome, usually a deficiency of salivary secretion. The diagnosis of Sjogren's syndrome presents no difficulties. A dry,ropy secretion with shreds adhering to the corneal epithelium is seen in practically no other condition. Filaments may be seen, and staining with fluorescein will usually show a few areas large enough to be seen grossly. The slit lamp will show many more staining areas. The conjunctiva appears dry, red and more or less thickened. In extreme cases it is so thick and velvety as to suggest trachoma. The associated symptoms and examination of the mouth will clinch the diagnosis. It is the mild forms which present difficulties in diagnosis. These forms may easily be diagnosed as chronic conjunctivitis. Slit lamp examination, after staining with fluorescein, will reveal corneal changes. The fact that patients were seen with definite lacrimal deficiency but no corneal changes indicates that some other factor may be necessary to produce the typical picture. A diagnosis of keratoconjunctivitis sicca in its milder forms depends on a knowledge that these mild forms exist and on the routine use of a test for lacrimal function whenever the possibility of the condition exists. The patients in group 1 seemed to obtain relief from irritation by the use of a substitute for tears. The authors have found the use of gelatin and Locke's solution, as proposed by Rucker, satisfactory, provided a preservative is added to prevent bacterial growth. Patients such as those in group 2 will often obtain enough relief when using this solution so that nothing further is necessary. Patients showing a more severe deficiency and more corneal lesions obtain only relative relief and are much more comfortable when the tear points are closed. Patients with moderate lacrimal deficiency were given subcutaneous injections of 0.5 mg of prostigmine hydrobromide. Of 13 patients so treated, 11 showed a definite increase in lacrimal secretion. Since most patients in groups 1 and 2 obtained relief from a substitute for tears and those with more severe manifestations from closing of the tear points, no attempt has been made to treat a series of patients for long periods with prostigmine. Amounts of vitamin A were added to the diet of a number of the patients. Since this supplementary treatment was usually begun along with other treatment, it was difficult to judge its effect. The patients of group 3 obtained only relative relief of symptoms by a substitute for tears. Closure of the tear points, however, always produced improvement.

Heparin in Thrombosis of Retinal Vein—Reports in the literature indicate that treatment with heparin gives excellent results in thrombosis of the central vein of the retina if instituted early. The 2 cases described by the authors are interesting because of the length of time during which the thrombosis existed before treatment (in 1 case five weeks and in the other three weeks) and because of the exceptionally good visual results obtained (vision of 6/6). These were cases of trunk occlusion of the central retinal vein and not of branch block. The results obtained indicate that thrombosis of long standing

is also amenable to heparin treatment. The reason is difficult to understand. It may be that heparin prevents further increase in the thrombotic process, thus permitting greater canalization and resumption of the normal function of the vein.

Archives of Otolaryngology, Chicago

38 1-100 (July) 1943

- Sarcoma of Tonsil Impressions Made by 7 Cases B A Whitecomb—p 1
Preliminary Voice Training for Laryngectomy J W McCall—p 10
Mechanism of Phonation Demonstrated by Planigraphy of Larynx. B L. Griesman—p 17
Treatment of Dysphagia from Hernia Through Esophageal Hiatus in Diaphragm P P Vinson—p 27
Acute and Chronic Mastoiditis Clinical Analysis of Five Hundred and Twenty Six Consecutive Operations C. E. Towson—p 32
Office Noises and Their Effect on Audiometry W D Currier—p 49
Tonsils and Adenoids. J D Singleton—p 71

Archives of Pathology, Chicago

36 127-236 (Aug) 1943

- Undescribed Type of Erythropoiesis Observed in Human Sternal Marrow L R Limarzi and S A Levinson—p 127
Carcinoma Which Simulates Sarcoma Study of 110 Specimens from Various Sites S M Brooks—p 144
*Conjunctival Exanthem in Spotted Typhus A P Artyin—p 158
*Spontaneous Rupture of Normal Spleen O A Brines—p 163
Morphology of Eastern and Western Strains of Virus of Equine Encephalomyelitis D G Sharp A R. Taylor Dorothy Beard and J W Beard—p 167
Adenocarcinoma of Pyloric End of Stomach Consideration of Its Histogenesis and Report of 2 Cases D A Wood—p 177
Note on So-Called Undifferentiated and Embryonic Cells P Gruenwald—p 190
Pigmented Papilloma of Skin R A Fox—p 195
Intimal Changes in Medial Degeneration of Aorta A Rottino and R Poppiti—p 201
Quantitative Study of Correlation Between Basophilic Degeneration of Myocardium and Atrophy of Thyroid Gland C E Fisher and R M Mulligan—p 206
Osteogenesis Imperfecta Anatomic Study of Case. E B Ruth—p 211
Pathology of Pancreatic Islets. G Gomori—p 217

Conjunctival Exanthem in Spotted Typhus—Artyin observed red points and spots in conjunctivas of persons dying of typhus. This sign received scant attention and is practically unknown to the majority of the physicians. It was found in 94 per cent of the cases of typhus investigated at the Moscow Clinical Institute for Infectious Diseases. In 95 per cent of these cases the cutaneous eruption was indistinct, in 12 per cent it was absent. The conjunctival spots remained the sole distinguishing sign on gross inspection. In 6 per cent of undoubted cases of typhus, gross inspection failed to reveal these spots. The conjunctivas in these cases appeared pale. Such cases belonged to a group in which death took place late in the disease and was caused by various complications, such as pneumonia or reactivated pulmonary tuberculosis. The red points and spots present various forms and dissimilarities as regards the intensity of their bright red or yellow color. They are seen on the conjunctiva of the lower lid on the upper lid and occasionally on the sclera. In more than 600 cadavers conjunctival spots were encountered with fair constancy in only the following infectious diseases: (1) typhus, (2) septic endocarditis, particularly endocarditis lenta, and (3) meningococcal sepsis. Exceptionally, red spots were noted on the conjunctivas in pneumococcal sepsis complicated by purulent meningitis. Other infectious diseases only rarely present similar changes. The finding of these characteristic changes in the conjunctivas of cadavers justifies the suspicion of typhus in clinically obscure cases.

Spontaneous Rupture of Normal Spleen—Spontaneous rupture of a previously normal spleen is a rare lesion the exact incidence of which is difficult to determine. A certain amount of suspicion is always attached to the diagnosis because the spleen may not have been normal previously and because the elimination of the possibility of minor trauma is difficult. Brines suggests the following definition for the term: the spleen is found to be free from disease on careful pathologic examination and there is no history of injury other than movements or physiologic strains which are a part of the daily life of the average person. He lists 35 cases collected from the literature and a detailed history of a new case.

Bulletin of Johns Hopkins Hospital, Baltimore

73 1-64 (July) 1943

- Howard Atwood Kelly C F Burnam—p 1
Attempt to Induce Formation of Fibroids with Estrogen in Castrated Female Rhesus Monkey L Vargas Jr—p 23
Studies in Metabolism of Human Placenta I Oxygen Consumption in Relation to Ageing H W Wang and L M Hellman—p 31
Further Observations on Lowering of Blood Uric Acid by Uricase Injections Ella H Oppenheimer and H G Kunkel—p 40

Bulletin New York Academy of Medicine, New York

19 523-596 (Aug) 1943

- Oliver Wendell Holmes Century's Vindication of His Work on Puerperal Fever B P Watson—p 525
My Dr Oliver Wendell Holmes R Fitz—p 540
Obstetrics Yesterday and Tomorrow A F Guttmacher—p 555
Trend of Birth Rate Yesterday Today and Tomorrow L I Dublin—p 563
Role of Artificial Insemination in Treatment of Human Sterility A F Guttmacher—p 573

Cancer Research, Baltimore

3 497-568 (Aug) 1943

- Comparative Histologic Study of Anterior Hypophysis and Ovaries of Two Strains of Rats One of Which Is Characterized by High Incidence of Mammary Fibroadenoma. J M Wolfe and A W Wright—p 497
*Cancer Family Manifesting Multiple Occurrences of Bilateral Carcinoma of Breast D A Wood and H H Darling—p 509
Sebaceous Glands and Experimental Skin Carcinogenesis in Mice W L Simpson and W Cramer—p 515
Attempts to Induce Stomach Tumors I Effect of Cholesterol Heated to 300 C A H M Kirby—p 519
Human Neoplasms in Tissue Culture II Observations on Cells Derived from Peritoneal and Pleural Effusions D R Coman—p 526
Nucleolar Vacuoles in Living Normal and Malignant Fibroblasts W H Lewis—p 531
Yolk Sac Cultivation of Tumors A Taylor R E Hungate and D R Taylor—p 537
Effect of Yolk Sac Cultivated Tumors on Hemoglobin Level in Embryonic Chick. D R Taylor Marguerite McAfee and A Taylor—p 542
Growth of Alien Strain Tumors in Parahibiotic Mice M Harris—p 546
Vitamin C and Tumor Growth. A Brunschwig—p 550

Cancer Family—Wood and Darling present the record of a cancer family in which bilateral carcinoma of the breast had occurred in four generations. Attention was drawn to this family during a study of the third generation. These were 3 sisters, all of whom had breast cancer. One female sibling of the fourth generation developed a breast cancer at the age of 18 years. The predisposition to cancer of the breast seems to be transmitted in the maternal line of descent. Breast cancer occurred only in those women who had been nursed by their mothers. Mammary glandular tissue in all cases examined microscopically was hyperplastic and compatible with the changes induced by hyperestrogenization. In view of the hyperplastic breast tissue and the rather singular nursing history, the operation of a factor somewhat similar to that demonstrated by Bittner in mice is suspected. A cancer family with 5 sisters afflicted with mammary carcinoma, in 3 of whom the disease was bilateral, was recently reported by Handley. In 2 of these patients there were changes described as "chronic mastitis," which in one was proliferative in type. When it is discovered that a patient is a member of a family such as the one just presented or that cited by Handley, the question of early recognition of the disease as well as possible prophylaxis becomes pertinent. The authors pose the following questions: Should a program of "wait and see" with periodic examinations be recommended? Should surgical excision of the breast be done? Should one rely on administration of antiestrogenic hormones or castration? Will it be possible to recognize in the future a syndrome indicative of hyperestrogenization or other syndromes that might serve as danger signals? Should these women have babies? If so should they nurse them and, if not, should they run the danger of breast carcinoma from stagnation?

Delaware State Medical Journal, Wilmington

15 101-120 (June) 1943

- Primary Glaucoma Its Etiology Symptoms Diagnosis W O LaMotte—p 101
Meningococcal Meningitis W H Gordon—p 107

15 121-138 (July) 1943

- New Delaware Plan for Medical Care H A Mayhew—p 121

Florida Medical Association Journal, Jacksonville**30 13-44 (July) 1943**

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Hawaii Medical Journal, Honolulu**2 191-228 (March-April) 1943**

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were familial, occurred. Ten cases of pertussis (6 from familial exposures) resulted. Among the 69 persons who escaped, the last agglutinative titer prior to exposure varied from 0 to 1/2,560. Forty-six had titers of 1/320 or higher. Among the 10 persons who were attacked with pertussis the preexposure titers varied from 0 to 1/160. These observations suggest that, whereas immunity may exist in the absence of demonstrable agglutinins, susceptibility does not occur in the presence of agglutinins in high titer.

Public Health Reports, Washington, D C

58 1001 1032 (July 2) 1943

- Effect of Lead Absorption on Blood Calcium W V Jenrette and L T Fairhall—p 1001
Infection in Monkeys with Strains of *Trypanosoma Cruzi* Isolated in the United States D J Davis—p 1006
Salmonella Enteritidis Experimental Transmission by Rocky Mountain Wood Tick Dermacentor Andersoni Stiles R R Parker and E A Steinhaus—p 1010
Report on Fleas *Opisocrostis Bruneri* (Baker) and *Thraassis Bacchi* (Roths) as Vectors of Plague F M Prince—p 1013
Tick *Ornithodoros Rudis* as Host to *Rickettsiae* of Spotted Fevers of Colombia Brazil and the United States G E Davis—p 1016

58 1033 1076 (July 9) 1943

- Influenza and Pneumonia Mortality in Group of Ninety Cities in United States August 1935-March 1943 with Summary for August 1920-March 1943 Mary Gover—p 1033

Surgery, Gynecology and Obstetrics, Chicago

77 113 224 (Aug) 1943

- *Intravenous Human Plasma and Serum Therapy Cause of Reactions with Particular Reference to Use of Concentrated Plasma and Serum J M Hill and E E Muirhead—p 113
Implantation of Hepatic Duct into Duodenum or Stomach L R Dragstedt O C Julian J G Allen and F M Owens Jr—p 126
Hexestrol Comparative Study of Estrogens and Methods of Administration J G Crotty S A Schloss and G Lyford—p 130
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Study of Derangement of Semilunar Cartilages Based on 850 Cases W R MacAusland—p 141
Roentgen Pelvimetry Commentary H Thoms—p 153
*Aortic Embolectomy G Murray—p 157
Prevention of Gangrene Following Ligation of Major Arteries—Experimental Study Rose Spiegel Mae Friedlander and S Silbert—p 162
*Use of Autotransfusion in Surgery of Serous Cavities R A Griswold and A B Ortner—p 167
Triphalangeal Thumb Report of 6 Cases P W Lapidus F P Guidotti and C J Coletti—p 178
Insertion of Smith-Petersen Nail Without an Initial Skin Incision B B Larsen—p 187
Malignant Hemangioma L T Byars—p 193
Mechanism of Jaundice in Cancer of Pancreas Naomi Kaplan and A Angrist—p 199
Wound Immunity J K Berman A D Houser and W A Kurtz—p 205
Surgical Management of Prolapse of Uterus and Vagina Report of 730 Personal Operations L E Phaneuf—p 209
So Called Aseptic or Chemical Meningitis Report of 2 Cases. H Livingston V Wellman D Clark and V Lambros—p 216

Intravenous Human Plasma and Serum Therapy—Hill and Muirhead have described and advocated the use of concentrated plasma and serum. The small package and the increased speed and simplicity of use of dried plasma packaged for administration in concentrated form have been held to be of particular significance for military use. The authors present a study of reactions based on extensive observations on the preparation and administration of concentrated plasma in order to clear up misconceptions concerning the safety of this type of therapy and to establish confidence in its use. The observations deal with plasma prepared as previously outlined by the authors. The salient features of the method are (1) pyrogen free technic for preparation of all apparatus tubing and solutions, (2) sterile technic throughout checked by bacteriologic control studies, (3) pooling of blood of all different types just prior to separation of plasma, (4) bulk desiccation of plasma from the frozen state by the adrenergic process and (5) sterile transference of dry plasma to a small final container. Reactions are classified according to causative factors, namely, factors inherent in plasma or serum factors introduced during the preparation factors associated with faulty administration including contraindications and peculiarities or idiosyncrasies of the recipient.

The authors stress that properly prepared concentrated plasma is safer than whole blood transfusions. Although plasma prepared by pooling after separation of erythrocytes carries little risk, greater safety can be obtained by pooling of blood of all different types prior to separation. The table listing the febrile and urticarial reactions in the course of 1,160 injections in 520 cases shows a total of 24, or slightly over 2 per cent.

Aortic Embolectomy—Murray believes that complete obstruction of the bifurcation of the aorta from acute embolism is amenable to operative intervention. The technical procedure of removing such an embolus is not difficult. If undertaken within twelve to twenty hours after the accident and successfully completed, the results are exceedingly gratifying and the prognosis is changed to one of optimism, provided the preexisting cardiovascular disease has not in itself jeopardized the chances of the patient. The author reports five successful aortic embolectomies. There were no technical difficulties and no accidents or disasters. Several methods of approach have been studied and tried, but the one used in these 5 cases, which has been entirely satisfactory, has been through an extraperitoneal abdominal approach. The appearance of shrunken extremities is changed from the pallor and cyanosis of impending gangrene to that of a normal rosy pink. The patient is returned to the ward, when continuous intravenous heparin is given in sufficient quantity to keep the blood clotting time at about fifteen minutes for the following three days. In spite of the fact that most of these patients eventually die of embolism the patient can be completely relieved of symptoms and returned to the original state of health following the surgical treatment of the immediate episode.

Autotransfusion in Surgery of Serous Cavities—Griswold and Ortner think that all too often several pints of blood are thrown away from the body cavity of patients bleeding to death. It is their belief that this blood represents the most readily available, abundant, rapid and safe replacement therapy for these urgent cases. Large quantities of blood are often immediately accessible, the blood is compatible and needs no crossmatching and the danger of transmission of disease, such as syphilis or malaria, is absent, as is the possibility of an allergic response. The authors give a brief history of autotransfusion in surgery of the serous cavities and analyze their own observations in one hundred consecutive autotransfusions. In twenty-two hemorrhage was due to ruptured ectopic gestation, and in the remaining seventy-eight penetrating and non-penetrating trauma to the thorax and abdomen was the etiologic agent. There were thirty deaths in this group, or a mortality of 30 per cent. One fatal reaction occurred in the 100 cases. In this case there was a break in the technic of filtering the blood. In 2 other instances there were reactions from which the patient recovered, giving a combined percentage of 3.0 for reactions. One patient had no reaction from the autogenous blood but had severe reactions on two occasions from blood obtained from the bank. Autotransfusion is a valuable adjunct in the treatment of internal hemorrhage. A simple suction apparatus is described which is more efficient in the collection of blood than mopping it from the body cavities. The technic particularly as regards filtration must be rigid. Bile mixed with blood as the result of injury of the liver or biliary tree, and bacterial contamination from hollow viscus perforation add danger to the procedure. This danger is not so great as might be thought and the need of blood is frequently far greater than the danger involved. Old blood because of hemolytic changes should not be used. Alkalinization of the urine may prevent reactions caused by partial hemolysis of the blood.

Western J Surg, Obst & Gynecology, Portland, Ore

51 257-304 (July) 1943

- Spontaneous and Induced Abortion Modern Concepts of Their Significance Pathogenesis Diagnosis and Treatment. R. N. Rutherford—p 257
Pituitary Antidiuretic Hormone in Diabetes Insipidus 8 Cases of Diabetes Insipidus 4 with Pregnancy F E Harding—p 269
Photographic Method for Recording Uterine Activity in Small Animal A C Kirchhof and A A David—p 277
Abdominal Pregnancy Case Report. S D Hart—p 280
Fractures of Hip Analysis of 114 Cases of Fractures About Hip Joint D B Lucas and J H Varney—p 283

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Book Notices

A Handbook of Psychiatry By P. M. Lichtenstein M.D. LL.B. in Charge of Psychiatry and Legal Medicine for the District Attorney County of New York and S. M. Small B.S. M.D. Psychiatrist and Assistant Medical Director National Hospital for Speech Disorders New York Cloth Price \$3.50 Pp 330 New York W. W. Norton & Company Inc 1943

This book is a valuable contribution because of the simplicity of its language and the clearness of its expression. It defines various terms in psychiatry with ease. It does not discuss any controversial issues but contains well proved facts. The book contains sixteen chapters, on normal personality functioning, abnormal behavior, the mental examination, psychometric tests, feeble-mindedness, psychopathic personality, psychoneuroses, war psychoneuroses, psychosomatic illnesses mood disorders, schizophrenia, paranoia and paranoid reactions, delirium and allied conditions, organic brain disorders, general principles of psychiatric therapy and therapeutic aids. The contents are not detailed but they cover briefly the essentials of psychiatry. The authors have used case material from their court records in giving examples of the various diseases in psychiatry. There is a bibliography after each chapter. This book is recommended chiefly for the general practitioner the nurse and the social worker. There is a definite need for such a book presenting such easy and fact finding reading.

Hypnotism By G. H. Estabrooks Cloth Price \$2.50 Pp 240 New York E. P. Dutton & Co. Inc. 1943

There is certainly a need for a popular or semipopular book on hypnosis, but this current jumble of truth and speculation cannot be considered the answer from the physician's point of view. Although the author in his preface claims that the facts and rules of hypnosis are as scientific as those of chemistry, this is pure balderdash and the book cannot bear out his contention. Books on hypnosis have run the gamut from charlatan 5 cent book on how to hypnotize and conquer the world to the excellent scientific products of Bramwell and Clark Hull. Although Estabrooks is a professor of psychology at Colgate University, the material in this book does not bolster his position as an authority on the subject. He makes bald statements which are not currently believed, such as 'cases of kleptomania or compulsive stealing fit into the picture of posthypnotic suggestion'. He cites examples from his own experience which have no reported counterparts elsewhere in the literature and hence are not verifiable. He speculates in extenso about Hitler's hypnotic ability and makes some bizarre suggestions about how hypnosis could be utilized in warfare, which, if carried out, to this reviewer's mind, would probably be as dangerous as valuable. For instance, the author believes that a man could be given false information under hypnosis and give it out as sincere when captured by the enemy, thus misleading the latter, a doubtful project. The chapters which are largely descriptive, such as those on the induction of hypnosis, the more common phenomena of hypnosis, also hypnotic suggestion, are interesting and not bad. However, his psychosomatic examples of the use of hypnosis in the removal of thoracic pain in tuberculosis or in rheumatic cases, cited from another author, are misleading. The style is light and easy to read, at times it borders almost on the point of boudoir intimacy, but the physician might well be advised to reserve his reading on the subject until a more scientific book of the same general nature appears.

Surgical Care A Handbook of Pre and Post Operative Treatment. By R. W. Haren F.R.C.S. Major R. A. M. C. Assistant Surgeon Royal Cancer Hospital London Cloth Price \$3 Pp 271 with 80 illustrations Baltimore William Wood & Company 1942

'Surgical Care' is a rather ambitious title for this small volume. The book attempts to cover all the specialties of surgery and hardly does justice to many of them. The subtitle is not adhered to very rigidly, as there is relatively too much of the basic sciences. There is much good material of practical value in this book though many surgeons will not agree with some of the methods advocated. Much of this bears elaboration and some of it is passed over too briefly. The context seems in general, too elementary for the surgical house staff and in places too advanced for the nursing staff.

Introduction to Organic and Biophysical Chemistry By L. Earle Arnow Ph.D. M.D. Director of Biochemical Research Medical Research Division Sharp & Dohme Inc. Glenolden Pa. and Henry C. Reltz Ph.D. Assistant Chemist in the Western Regional Research Laboratory United States Department of Agriculture Albany California Cloth Price \$4.25 Pp 736 with 91 illustrations St. Louis C. V. Mosby Company 1943

One of few combination textbooks on organic and biologic chemistry, this is designed by the authors for use in premedical, preclinical, home economics, agricultural, dietetics and physical education curriculums. It may be well adapted for all except premedical courses, being too brief for adequate preparation in either the organic or the biochemical phases. Of the three parts, part I is devoted to a review of chemical fundamentals. These include the elements, atomic theory, structure of the atom, valence, ionization (from the Arrhenius theory), acids, bases and salts (according to classic theories) and solutions. Unfortunately, no mention is made of newer concepts of ionization or of acids and bases. Part II, of approximately five hundred pages, is devoted to organic chemistry, covering adequately all the topics usually found in an elementary organic textbook, with illustrations and special emphasis on compounds of biologic and medicinal interest. Amino acids are presented as uncharged ions making it difficult for the reader to appreciate fully the amphoteric properties of proteins. Part III, of about two hundred pages, covers the biochemical topics of enzymes, respiration, carbohydrate, fat protein and mineral metabolism, hormones, vitamins and nutritional requirements. The division of the book into three distinct sections makes the inclusion of organic and biologic chemistry in one volume of less unique value than if an integrated treatment of the two fields had been attempted. At the end of each chapter, study questions and references to current literature, textbooks and reviews are given. In an appendix are extensive tables of the composition and caloric value of foods. At least one error requiring attention in future editions should be pointed out. The reference (p. 90) to methyl chloride in household refrigeration as "nontoxic to man, a valuable property in case of a leak in the refrigeration system" is a misstatement, for the compound is definitely toxic.

The Examination of Waters and Water Supplies (Thresh Beale & Suckling) By Ernest Victor Suckling M.B. B.S. M.R.C.S. Consulting Bacteriologist and Analyst to Various Water Authorities Fifth edition Fabrikoid Price \$12 Pp 849 with 63 illustrations Philadelphia Blakiston Company 1943

The fourth edition of this standard textbook appeared in 1933 under the authorship of Thresh, Beale and Suckling. With the death of Dr. Thresh and the retirement of Dr. Beale, Dr. Suckling, a distinguished English bacteriologist, has assumed responsibility for the volume, long known to British and American workers in the water supply field. The fifth edition follows closely in form and content the subject matter and treatment presented in the fourth edition, with only minor extensions in text, generally adequately designed to include new or to expand old data. For example, almost four pages have been added on the detection and estimation of fluorine while the chapter on intestinal organisms used as indexes of pollution has been adjusted and expanded to give recognition to developments in British and American laboratory and field practice. In similar fashion the chapter on standards and standardization has been elaborated with more discussion of American practice. Unfortunately, the text was prepared before the U. S. Treasury Department standards were revised and released in 1943 since these modify materially the data and discussions now in the text. The volume pays somewhat of a penalty for the effort to supply so vast a coverage in the water supply field since the chapters have a scope beyond that indicated in the title. Part VIII, covering the purification and treatment of water, represents, for example, some one hundred and thirty-five pages or over a fifth of the total text. Although excellent in treatment it suffers through the necessity for sharp compacting in space. Perhaps it deserves a separate volume. The volume, unlike most American textbooks carries a great deal more 'backing up' and historical material. Such a practice has real merit although again it gives some impression of diffuseness in those sections largely devoted to the exposition of the title. The book is a welcome revision of an old standby and should be available to all workers in this field.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

GAUZE MASKS TO PREVENT CONTAGION

To the Editor—I am attempting to obtain the general consensus regarding the value of wearing masks in contagion. I should appreciate an opinion for or against the use of the standard six thickness gauze mask by attending physicians and the nursing staff. I should like this information particularly with reference to epidemic meningitis, tuberculosis, diphtheria and virus pneumonia.

C. G. Peterson, M.D., San Bernardino, Calif.

ANSWER—The most that can be expected from masks is the enmeshing of the coarser droplets of saliva or nasopharyngeal secretions while breathing, coughing, talking and sneezing. They are not a barrier to dried, minute particles of infectious material either bacterial or viral in nature which float about in the air, and they obviously do not keep infectious material from contact with the conjunctivas.

In a recent publication (*Science* 97:229 [March 12] 1943) Francis states that "the ordinary gauze mask is not only not beneficial but actually harmful." He recommends a new type of mask containing flannel filters. When properly fitted they filter infectious particles from the air and become even more efficient after laundering.

Efficient masks would no doubt aid in preventing the spread of the four diseases listed, but perhaps other measures at present under investigation such as ultraviolet irradiation of the air, the use of aerosol sprays or chemoprophylaxis may eventually prove to be even more effective.

[This query was submitted to a prominent internist, whose reply appears. Opinion on this subject, however, is greatly divided and some internists and pediatricians recommend and enforce the use of gauze masks for persons taking care of patients with communicable diseases. The question does not appear to have been settled.—Ed.]

OSTEOCHONDRITIS DISSECANS OF KNEE

To the Editor—A patient has osteochondritis dissecans with secondary hypertrophic osteoarthritis which resulted from an injury to her left knee. She suffers considerable pain and is unable to use the knee. What treatment would you advise for this condition and would diathermy be of any benefit?

J. L. Snively, M.D., Sterling, Ill.

ANSWER—Osteochondritis dissecans of the knee may occur at any age from puberty on, but osteoarthritis is usually seen in people of early middle age on.

If in the case mentioned there is a loose body, it should be removed and the area of origin—usually the internal condyle of the femur—smoothed down. This will relieve the patient of the discomfort—usually catching or locking of the joint—and the associated irritation of the joint lining caused by a wandering osteocartilaginous body.

The osteoarthritis is a separate condition and is best treated by restriction of excessive activities and heat locally to the joint by hot packs, baking or diathermy.

PLASMOCHIN FOR MALARIA

To the Editor—In the authorized manual of therapy issued to army medical officers the following statement appears: "Its [plasmochin's] most striking action is on the gametocytes of *P. falciparum*, which it devitalizes and renders noninfectious. When the latter drug is administered as described above, the relapse rate appears to be substantially lowered." It is my understanding that gametocytes represent the end stage of the plasmodium in the human host and do not differentiate further or cause symptoms unless first undergoing sporogony in the *Anopheles* mosquito. If this concept is true, can a relapse occur in man from the presence of gametocytes alone and what would be the explanation thereof?

Captain, M. C. A. U. S.

ANSWER—Although there are some reports which indicate that plasmochin may reduce the relapse rate of malaria, those most familiar with the use of this drug doubt if it has the effect on relapses indicated in the authorized directive. It is probable that the directive will be altered soon and that the use of plasmochin will no longer be recommended.

The gametocytes originate from the asexual parasites and, although the sexual forms are noninfectious for man and produce no clinical symptoms, they are undoubtedly always accompanied by a stage of asexual parasite which can initiate the relapse.

PARESTHESIAS AND POSSIBLE EFFECTS OF PROLONGED ETHER ADMINISTRATION ON ANESTHETIST

To the Editor—Are there any instances of ill effects to anesthetists who are regularly exposed to ether fumes over long periods of time? I have been giving anesthetics for some twenty years. Much of the time my breath carries the odor of ether hours after exposure. For the past five years or more I have experienced paresthesia in my feet. This has extended well up to my knees, and now my hands have a similar sensation. It seems to me that it is progressing and becoming more like a peripheral neuritis with some shooting pains. Is it reasonable to think that ether fumes could be the source of irritation? Outside of this annoyance, I feel very well for a 62 year old.

M. D., Kansas

ANSWER—There are no proved cases on record of ill effects to anesthetists from inhalation of ether vapor as a result of administering ether to patients by standard methods. It is not clear why an anesthetist's breath would carry the odor of ether for hours after exposure to the anesthetic agent unless, through some individual technic of administration, the anesthetist inhaled undue amounts of ether from time to time. It is improbable that inhalation of ether fumes would cause paresthesia of the feet. Other causes for such disturbances should be sought. Not infrequently elderly persons complain of severe paresthesia, particularly burning, in the feet for which no good reason can be found. It is believed that in many of these cases the cause is senile degenerative changes in the sensory tracts of the central nervous system.

SOLVENT FOR REMOVAL OF ADHESIVE TAPE

To the Editor—I have observed industrial medical departments using benzene for the removal of adhesive tape. It is obvious that this is a bad practice as it exposes the nurse who employs this technic to the inhalation of toxic concentrations of benzene vapors. A death from chronic benzene poisoning occurring in a switchboard operator who over a period of years had used benzene on a rag to clean her switchboard has previously come to my attention. I should appreciate an opinion from you as to the dangers of this procedure and as to the most satisfactory safe solvent which could be used as a substitute.

L. M. Petrie, M.D., Atlanta, Ga.

ANSWER—Chronic benzene poisoning has been produced in workers exposed repeatedly to low concentrations of this substance and for this reason it is not believed that benzene is a satisfactory material for the removal of adhesive tape in dispensaries and hospitals. It is, of course, necessary to use a material which is a good solvent for the adhesive in the adhesive tape and at the same time a substance which is relatively nontoxic and which possesses a somewhat high flash point in order to obviate the possibility of readily taking fire.

A solvent which answers these requirements is Stoddard solvent or high flash naphtha. Stoddard solvent is a straight-run petroleum naphtha and possesses a flash point above 100°F. Stoddard solvent is used to a great extent in the dry cleaning industry as a substitute for carbon tetrachloride because of its nontoxic properties and its high flash point.

ESTROGENS FOR BOTH AMENORRHEA AND MENORRHAGIA

To the Editor—On page 716 of the July 3 issue of *The Journal* it is recommended that a patient with excessive vaginal bleeding be given oral estrogenic therapy. Some gynecologists have suggested using estrogens to produce bleeding in cases of amenorrhea or oligomenorrhea when the anatomy seemed normal and no pathologic condition was discernible. Disregarding the advisability of the latter procedure, at least it ought to be admitted that the two therapeutic uses of the drug are incompatible: the one with the other because the same agent, estrogen, has been used to promote bleeding in one case and to stop it in the other. It would at first hand seem that this is unreasonable, that estrogen, if valuable in one case, would be contraindicated in the other. What is the basis for the use of estrogen in a case of bleeding as recommended in the answer cited?

William J. O'Neal, M.D., Detroit

ANSWER—It is well known that thyroid medication at times checks profuse uterine bleeding and at other times induces menstruation in cases of amenorrhea. Likewise, estrogens can be used to overcome both amenorrhea and menorrhagia. The effect produced depends on the level of estrogen in the blood. At certain levels bleeding is induced, and at other levels bleeding is checked. There have been clinical reports proving that oral estrogens may successfully be used for the two diametrically opposite clinical manifestations. Palmer (*Am J Obst & Gynec* 41:1018 [June] 1941) prescribed diethylstilbestrol for 31 women aged 12 to 55 who suffered from abnormal uterine bleeding and observed favorable results. Cuyler, Hamblen and Davis (*J Clin Endocrinol* 2:438 [July] 1942), checked prolonged or excessive uterine bleeding in 11 of 15 women by giving them diethylstilbestrol orally. The average time for producing hemostasis was 4.4 days and the daily doses ranged from 2 to 6 mg. Karnaky (*Year Book of Obstetrics and Gynecology*, by J. P. Greenhill, 1942, p. 535) claims that in 87 per cent of women with severe functional bleeding treated with diethylstilbestrol regular menses will return.

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TROPICAL MYCOSES

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Tropical diseases, and particularly those involving the skin which are due to the higher fungi, are going to occupy the attention of the medical profession both at home and abroad, in the civilian population as well as in the military or naval services, more and more, the longer the war lasts. Rare mycotic infections which are unusual in this country will gradually be recognized as commonplace, while exaggerated clinical manifestations of the commoner fungous diseases of the skin, already well known to us but aggravated by their origin in the tropics, are now being seen in large numbers in men returning from the South Pacific areas.

All physicians should be aware of the possibility of the occurrence of these conditions here at home and be able to recognize them and stamp them out before they can become endemic.

It has been definitely proved that many of the more serious systemic fungous diseases begin with nodules or ulcers on the skin. Also that, if the skin lesions are recognized early and the proper diagnosis is made, treatment will in most instances prevent a general dissemination of the disease, which very frequently results in death.

Although there still exists a certain amount of confusion with regard to the classification of the parasites of the ascomycetes and the hyphomycetes group which cause these diseases, their morphology, cultural characteristics and occurrence in the lesions are so well understood that early diagnosis and the institution of early treatment should be within the scope of all physicians both at home and in the services.

Tropical mycoses are due mainly to the, so-called higher fungi and may be divided into two classes.

First, the Ascomycetes (fungi that produce an ascus [sac] to hold spores) (a) *pie*dra (trichosporosis), (b) rhinosporidiosis, (c) lymphangitis epizootica, (d) histoplasmosis.

Second, the Hyphomycetes (fungi imperfecti) (a) *py*ti-riasis versicolor (tinea versicolor), (b) erythrasma, (c) trichophyton infections of the glabrous skin, (d) epidermophyton infections of the glabrous skin, (e) epidermomyces originating only in the tropics. (1)

This paper is a symposium on "Tropical Diseases of the Skin" is published under the auspices of the Section on Dermatology and Syphilology.

This portion of the symposium is presented as a review of the latest monographs on fungous diseases arising in the tropics with certain conclusions reached after a year's experience with men returning from the tropics.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

endodermophytoses, (2) cladosporian dermatoses, (3) aleurosporian dermatoses, (4) two dermatoses probably due to trichophytosis.

THE ASCOMYCETES

Piedra (trichosporosis)—This is a fungous disease involving the exterior of the shaft of the hair, particularly of the scalp and beard. It consists in the formation of tiny dark or light brown stony, hard nodules, scarcely perceptible to the eye, but which can be definitely felt when the hair is drawn between the fingers (McCarthy¹). It occurs in Europe, Asia and Japan as well as in South America (Colombia) and is thought to arise in persons who wash their hair and beard in stagnant river water and then apply a thick oily or mucilaginous substance as a hair dressing. After the hairs are soaked over night in 20 per cent potassium hydroxide solution, the nodes are seen to be made up of a large number of closely packed contoured spores.

The mycologic aspect of this disorder has been studied in detail by Bodin,² Vuillemin,³ Schaechter,⁴ Lombardo,⁵ Lampe⁶ and others. It is generally agreed that the parasite is a fungus and should be classified as a member of the ascomycetes group. *Trichosporum giganteum*, *Trichosporum beigei*, *Trichosporum ovoides* and *Trichosporum ovale* have been commonly reported from the different regions in which the disease occurs. Chalmers⁷ has reported a form of *pie*dra which he calls trichonocardiasis, which is due to a species of *Nocardia* (actinomyces). All these parasites grow slowly on Sabouraud's medium but better on carrots.

Trichosporosis must not be mistaken for trichorrhexis nodosa, a nonparasitic involvement of the hair shaft in which the hair is fractured transversely, resulting in a splitting of the ends into brushlike bundles of fibers. It should not be confused with monilethrix, which is nonparasitic and is congenital and hereditary and often the result of congenital syphilis. Trichosporosis differs from lepto-thrix by its regional distribution, color and type of parasites which are cocci or bacteria. Nits project off at an angle from the shaft, while in trichosporosis the shaft is more or less completely surrounded. In treatment the hair should be cleansed with benzine or ether or acetone. A 1 to 1,000 solution of mercury bichloride or a 3 per cent sulfur and a 3 per cent salicylic acid ointment can be effectively applied. Shaving

1 McCarthy, Lee. *Diseases of the Hair*. St. Louis: C. V. Mosby Company, 1940. p. 309.

2 Bodin. *La pratique dermatologique*. Paris: Masson & Cie, 1904. vol. 2. p. 239.

3 Vuillemin. *Un cas de piedra nostras*. Acad. d. sc. Paris, June 6, 1901.

4 Schaechter. *De la trichosporie (piedra)*. These de Nancy, 1901.

5 Lombardo. *Sulla piedra nostras*. Giorn. ital. d. mal. ven. 1904. p. 308.

6 Lampe. P. H. J. *Piedra in Batavia*. Geneesk. tijdschr. v. Nederl. Indie 80: 1519, 1940.

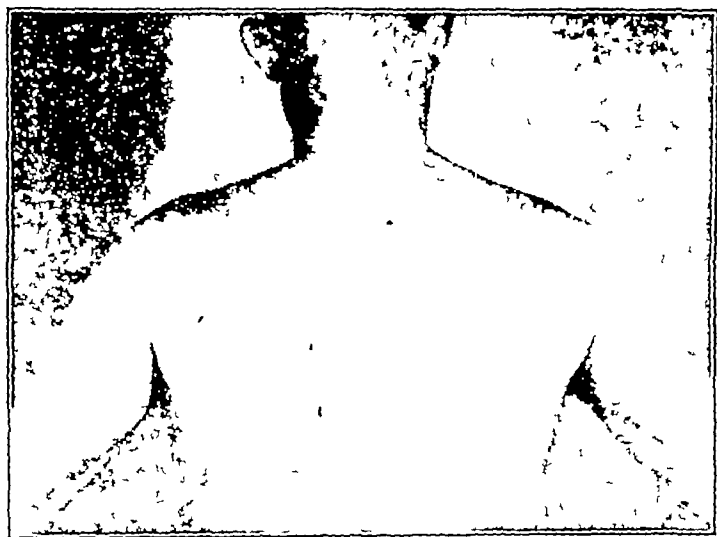
7 Chalmers. quoted by Stitt in *Diagnosis and Prevention and Treatment of Tropical Diseases*. ed. C. Philadelphia: Blakiston Company, 1942. vol. 2. p. 1151.

of the part, with application of the bichloride solution, is a rapid, effective method when it is possible to use it.

Rhinosporidiosis—This is a fungous disease chiefly of the mucous membranes of the nose with the production of polyps. Recent reports show that the ears, lacrimal sac, uvula and the mucosa of the penis may be involved. The causative organism, *Rhinosporidium seberi*, was at first thought to be a coccidial parasite, which it closely resembles, but it is now known to be a true fungus and is found in large numbers within the soft, raspberry-like growths it causes. It has been reported from Cochinchina, South America and the United States.

The mode of transmission of the disease is not known, but a closely related disease due to *Rhizopus equi* has been reported in horses in these regions. Treatment consists in removal of the polyps with a wire snare from the nose and destruction with electrocoagulation of the tumors from other regions, combined with the use of antimony and potassium tartrate.

Lymphangitis Epizootica—According to Stitt⁸ human beings working with horses suffering with this



Achromatic punctate type of tinea versicolor acquired in the tropics

fungous disease may develop nodules and ulcerations of the skin in areas rich in lymphatics. Cases have been reported from Asia (India, China and Japan), western Europe and northern Africa. Man appears to be only an accidental host, and no visceral or system involvement has been reported. The organism is a cryptococcus of the *farciniformis* or *pschrophylicus* type and has been easily cultivated at 22 C and successfully inoculated in guinea pigs, rats and white mice by Nino.⁹ Treatment consists in early incision and curettage of all the lesions combined with the use of arsenicals intravenously.

Histoplasmosis—Although the causative agent, *Histoplasma capsulatum*, usually produces a serious systemic disease with involvement of the deeper organs, the infection may begin on the skin as nodules and ulcers, particularly on the face. An early diagnosis, with excision and curettage of the lesions, combined with the use of fuadin, arsphenamine or antimony and potassium tartrate, may prevent systemic involvement, which often has a fatal termination. The disease, when well

developed, resembles the clinical picture of kala-azar. It has been reported from South and Central America (Panama), North Africa and Asia, as well as in the United States. In cultures and in smear preparations the parasite resembles a cryptococcus, and Benham has suggested the name *Cryptococcus hominis* for the organism.

THE HYPHOMYCETES

The Hyphomycetes are less perfect fungi than the Ascomycetes in that they do not produce a sac at the end of a hypha to hold their spores but exist as a mass of ramifying, threadlike filaments (hyphae), which is called the mycelium. Reproduction and growth take place by the lateral, angular or terminal addition of new hyphae or by the division of a single hypha.

Pityriasis Versicolor—This is widespread and therefore the best known of the epidermomycoses. It occurs in temperate climates about as often as in the tropics, but in hot countries the eruption varies somewhat in color and in distribution. Instead of the typical café-au-lait colored, scaly, greasy macules, one may find three atypical clinical expressions of the disease: (1) the red, or erythematous, form, (2) the circinate erythematous and squamous form and (3) the achromatic form. It is believed that these types are due to excessive sun, heat and humidity and really represent different degrees of the brown type, for the red and achromatic lesions become the usual brown type once the patient leaves the tropics. Again, the brown type may be found on the covered parts of the body, along with the red or achromatic types on the exposed portions. The same parasite, *Microsporum furfur*, can be obtained in all variants.

The achromia is an actual depigmentation rather than an impression gained by contrasting normal and abnormal skin areas. It is thought to be due to three factors: (1) the screening action of the scales, (2) the decoloring action of the sun and (3) the disturbance in pigment function of the skin due to the toxins produced by such large numbers of fungi.

Clinical variations of all the different types may be seen frequently in the tropics. The eruption may be limited to only the face or the scalp or to the backs of the hands. The lesions may be milium and punctate and remain so throughout the course of the disease with no tendency to coalesce until the entire trunk and the proximal halves of the extremities are completely covered. Circination, with the formation of small papules, has been reported.

The treatment of this mycosis consists in thorough removal of the scales by scrubbing with tincture of green soap followed by the application of 1 per cent solution of iodine crystals in alcohol or a 4 per cent solution of salicylic acid in alcohol or a 1 per cent chrysarobin ointment plus disinfection of the undergarments (underwear and nightclothes). Weeks of treatment are necessary, as the disease shows a definite tendency to relapse.

Erythrasma—This condition, which is due to *Microsporum minutissimum*, differs little in its tropical form from the type seen in temperate climes. The eruption is more inclined to involve several areas at one time, that is, the axillary regions, the mamillary and rectal folds, the region of the umbilicus and the web portions of the toes as well as the inguinal folds and internal surfaces of the thighs. As the result of chronicity and

⁸ Stitt, E. R. *Diagnosis and Treatment of Tropical Diseases*, ed. 6, Philadelphia, Blakiston Company, 1942, vol. 3, p. 1158.
⁹ Nino, F. L., quoted by Stitt. *Diagnosis and Treatment of Tropical Diseases*, p. 1159.

the accompanying itching and scratching, the skin of the plaques may be thickened and lichenified and may be mistaken for neurodermatitis or the ordinary *tinea cruris*. The vesicles and pustules are not fungous in nature and are due to infection with cocci resulting from scratching.

The treatment of uncomplicated cases is the same as for any of the superficial mycoses. If eczematization and pustulation have taken place, these must be treated before the parasite is attacked. Disinfection of the clothing is important but is often neglected and accounts for many of the relapses.

Trichophyton Infections of the Glabrous Skin—These eruptions, seen in the tropics, are usually due to the favoid type such as *Tinea alba*, which produces generalized eruptions of small, dry, scaly lesions, or to the small spored (microid) type, such as *Trichophyton asteroides*, which produces large solitary, deep, pustular lesions (kerion) or acute pustular eruptions on the fingers and dorsum of the hands. This parasite, or some of its variants, such as *Trichophyton granulosum*, may produce virulent forms of *sycosis barbae*. All these parasites are of animal origin, belonging to the horse, dog or cat. *Trichophyton rosaceum* and *Trichophyton violaceum* are especially prevalent in the Far East and cause a type of dry, scaly and to a less extent pustular form of *sycosis barbae* very difficult to cure. Occasionally any of these parasites may be isolated from the usual eruption of *tinea cruris*, which is thought to be due to the epidermophytosis as a rule.

After a year's experience with men returning from the tropics with ringworm infection of the skin, I have come to the conclusion that the large majority of the cases consist of the usual run seen in the United States but in a more exaggerated form. Three types of ringworm predominate. The commonest type is acromycosis (McCarthy¹⁰), often described as epidermophytosis, of the feet and hands. The eruption is extensive, covering the dorsum and sides of the feet and hands as well as the soles, palms and lateral surfaces of the digits. It is practically always pustular in character with strong tendencies to develop secondary lymphangitis and regional glandular enlargement. The eruption is very resistant to treatment and shows tendencies to recur when the patient returns to active duty. The following parasites have been cultured from this type: *Trichophyton purpureum* and its two variants, *Trichophyton plurizoniforme* and *Trichophyton lanorosum*. *Epidermophyton inguinale*, *Trichophyton interdigitale* and occasionally *Trichophyton asteroides*.

As a complication to acromycosis I have noted that there was also a ringworm infection of the superficial pustular type on the lower two thirds of the legs in many instances. These lesions often become secondarily infected and result in multiple ulcers varying in size from that of a split pea to that of a hazel nut. Sulfonamide ointments have no effect on these ulcers. After weeks they heal with the use of wet compresses of 1 to 8,000 potassium permanganate solution and 25 per cent cod liver oil ointment. Although the interdigitate parasite was found in a large number of these lesions, no secondary invaders could be demonstrated. Compresses with gramicidin solution were of no benefit

and seemed to cause irritation in our cases. In many of the cases with superficial ulcers, healing did not take place, even after all signs of infection had disappeared, until the congestion of the skin was overcome. A piece of sponge rubber large enough to extend 1 inch in all directions beyond the margins of the ulcer was applied over the potassium permanganate compresses. The entire lower part of the leg, beginning over the dorsum of the foot, was then wrapped with an Ace bandage, which was left on for eight hours each day. At night the cod liver oil ointment was applied. The value of this combined method of treatment cannot be too strongly emphasized.

The second type, or *tinea cruris* (*eczema marginatum*) presented the same morphologic characteristics as we are accustomed to see at home, but the lesions were more extensive and more inflammatory as a general rule. The eruptions responded nicely to treatment but tended to relapse once the patient perspired or returned to duty. It was necessary to continue treatment for two months after all clinical signs of the disease had disappeared. *Trichophyton purpureum* and *Epidermophyton inguinale* were the only parasites cultured. Cultures were obtained in about one third of the cases of this type.

The third type was extensive *tinea corporis*, covering the trunk, front and back and the proximal third of the upper arms. The eruption consisted of complete or incomplete annular lesions separated by small areas of normal skin. They were only slightly inflammatory and were covered with very fine branlike scales but showed no vesicles or pustules. Itching was intense. The clinical picture did not suggest a *tinea imbricata*, and only *Trichophyton rubrum* or its two variants, *Trichophyton lanorosum* and *Trichophyton plurizoniforme*, were found in the scales in about one third of the cases. This type of eruption responded nicely to an ointment containing 3 per cent iodine and 3 per cent glycerin in petrolatum. A 5 per cent ammoniated mercury ointment or a 3 per cent chrysarobin ointment produced so much irritation that it was necessary to stop them entirely. Whitfield's ointment, unless used in full strength, was not effective and was too irritating when applied to extensive body surfaces.

Tropical Epidermomycoses—In the stricter sense of the word "tropical," this term has been used to describe a group of fungous diseases that are found only in the tropics and that involve the skin almost exclusively. They differ widely in their clinical manifestations, their etiologic agents and their geographic distribution. So far I have had no personal experiences with these rarer types of fungous diseases. Langeron¹¹ has divided them into four groups according to the type of parasite that causes them:

1 Endodermophytoses, which are produced by a group of endodermophytosis (trichophytosis) with faviform cultures which attack only the skin and never the hair or deeper structures to form kerion or granulomatous lesions. Nor do they invade the blood stream. In this group are found *tinea imbricata*, *chlamydia* and *tinea intersecta*.

2 The cladosporian dermatoses (*horradendron* and *cladosporium*). Two types are recognized: (1) the achromatic type (parasitic achromia of Jeanselme); (2) the hyperchromic types (*tinea nigra* and *keratomycosis nigricans palmaris*).

10 McCarthy, Lee. *Histopathology of Skin Diseases*. St. Louis: C. V. Mosby Company, 1931, p. 472.

11 Langeron, M. *Nouvelle pratique dermatologique*. Paris: Masson & Cie, 1936, vol. 2, p. 335.

3 The dermatoses caused by parasites that produce aleurospores (*tinea albigena*, *khi-hueri*) This type may produce mycetoma as well as involve the skin

4 Two dermatoses probably due to trichophyta but insufficiently studied (tropical ringworm of Sabouraud and *tinea nigrocircinata*)

Tinea Imbricata (Tokelau) —This is a very pruriginous tropical skin disease that is characterized by the appearance of concentric circles or rings formed of scales which are attached on their periphery and are free at the center. The circles may assume a definite rosette-like pattern designated as cocards. At times the scales may be layered like the shingles on a roof. The fungus advances peripherally, leaving a smooth surface within the circle. A similar process again develops in the original central spot and forms a circle of scales within the older, or more peripheral, circle. The process is repeated until several rings of scales are formed, each originating from the central focus, the way concentric ripples form on water from the fall of a pebble, according to Stitt¹². The circles are from one-eighth to one-half inch apart, and the eruption may spread to involve the entire body with the exception of the axillae, groin, palms and soles. The nails have practically never been invaded.

The disease is due to a special type of fungus called *Endodermophyton concentricum* because it proliferates only within the skin, never penetrating deeper into the tissues and never attacking the hair. There is an entire absence of inflammation, which separates it from all other types of tropical ringworm. *Endodermophyton indicum* has also been cultured from the scales. This parasite produces a reddish culture, while *Endodermophyton concentricum* (*Endodermophyton tropicale*) produces a grayish white culture. Recent researches on *Epidermophyton purpureum* (*Trichophyton rubrum*) have shown that production of pigment is most variable on different batches of the same medium and is really only a secondary characteristic. Most authorities feel that the two parasites are identical. McCarthy¹³ was able to prove by inoculation of guinea pigs that *Trichophyton rubrum* was really an *endodermophyton*, as it never attacked the hair or the deeper structures. Two other species reported in this mycosis, *Endodermophyton tropicale* and *Endodermophyton mansonii*, are now recognized as being identical with *Endodermophyton concentricum*. Langeron¹⁴ believes that *Trichophyton concentricum* is the proper designation of the one and only fungus that causes this disease.

Although parasitic mycelia were first demonstrated in the scales in 1879 by Manson¹⁵ in China, the disease had been recognized clinically as early as 1686 in the Tokelau Islands. It is now widespread in all hot and humid parts of the islands of the South Pacific, the Malay Archipelago, southern China, southern India, Ceylon, Colombia, Brazil and Guatemala. No authentic case has been reported as originating in the United States. The disease is refractory to treatment. Manson¹⁵ recommended an iodine liniment containing 12.5 per cent iodine, as he found that the 7 per cent tincture was not strong enough to be effective. Two to 5 per

cent chrysarobin ointment has been used by many authors. Castellani¹⁶ prefers 60 to 120 grains (4 to 8 Gm) of resorcinol in 1 ounce (30 cc) of tincture of benzoin. These preparations will not be effective until the scales have been removed by thoroughly scrubbing the skin with hot water and tincture of green soap or sand soap. Sterilization of the clothing is most important, boiling or destroying them by burning is an absolute necessity.

Chumbeia —This is the name given to a fungous disease of the skin which is found in Brazil and which has often been confused with *tinea imbricata* or pinta. It was first reported by Fonseca¹⁷ in 1924, who isolated and cultured a parasite from the scales and called it *Trichophyton roquettei*.

The lesions consist of large, achromatic, annular or circinate, very pruriginous patches that are covered with a thick layer of scales. Even the scales have a translucent or whitish color. The scales are thickest on the edges of the patch and are easily detached. Practically any part of the body surface, with the exception of the hair and nails, may be involved.

This type differs from the usual ringworm of the glabrous skin by its constant and pronounced depigmentation, the absence of erythema and vesicles, and the fact that the scales are much thicker on the borders than in the center of the lesions.

Tinea Intersecta —This type of fungous disease is characterized by the appearance on the skin of papules which dry out and split across the top. It is widespread through Ceylon and southern India and southern China. Mycelial threads are easily demonstrated in potassium preparations of the scales, which produce a reddish faviforme culture on Sabouraud's medium. The parasite is called *Endodermophyton castellani* and has been transmitted from man to man but not to laboratory animals.

The disease begins as tiny, slightly elevated, deeply pigmented papules separated from one another by a narrow zone of normal skin. They enlarge very slowly, become very hard, dry out and crack transversely. They may remain solitary or coalesce to form irregularly sized and shaped plaques. The splits in the papules deepen until the lower layers of skin are involved. In this fashion large, thick, brownish scales are desquamated, leaving behind round or oval areas of whitish, depigmented skin similar to the desquamated areas seen in *tinea imbricata*. Rosette-like patterns never develop in this disease. Itching is intense over the involved areas, which may include especially the arms, legs, chest and back. No visceral or systemic involvement has been reported.

The disease is evidently benign, for it is easily cured with tincture of iodine, full or half strength, a 5 per cent ammoniated mercury ointment or a 3 per cent chrysarobin ointment.

Cladosporian Dermatormycoses (parasitic achromia of Jeanselme, *tinea flava*, hodi-potsy) —Although Castellani¹⁸ classified this eruption as an atypical type of pityriasis versicolor involving only the face and neck that was due to one of the *Malassezia*, which he called

12 Stitt, *Diagnosis and Treatment of Tropical Diseases*, p. 1172

13 McCarthy, Lee, *Contribution à l'étude des epidermomycoses avec présentation des six parasites nouveaux*, *Ann. de dermat. et syph.* 6: 19, 1925

14 Langeron, *Nouvelle pratique dermatologique*, p. 339

15 Manson, Patrick, *China Imp. Customs M. Rep.* 16: 41, 1879

16 Castellani, Aldo, *Tinea Imbricata*, *Brit. J. Dermat.* 25: 377, 1913.

17 da Fonseca, O., *Sobre a etiologia do Chimbéré dermatose endêmica dos índios do rio São Miguel, Sc. med.* 11: 615, 1924

18 Castellani, Aldo, *Tropical Forms of Pityriasis*, *Brit. M. J.* 2: 1271, 1905

Malassezia tropica, the work of Jeanselme,¹⁹ and more recently that of Fontoynt and Carougeau²⁰ have shown that this is a disease entity per se and is caused by a conidiospored hyphomycete of the genus *Hormodendron* (*Cladosporia*). According to Langeron,²¹ this parasite should be called *Hormodendron fontoynti*. Parasitic achromia is widely distributed and extremely common in all tropical countries. In Asia it has been found in the Indies, Ceylon, Malay Peninsula and Indo-China, also in Africa, Madagascar and Nigeria. So far, in South America it has been reported only from Brazil. This disease penetrates deeply into continents rather than remaining an insular coastwise disease, as is *tinea imbricata*.

The disease is characterized by the production, only on the glabrous skin of the face and neck, of scaly whitish plaques. The plaques, at first separated by areas of normally pigmented, healthy skin, gradually enlarge until large areas are involved. The eruption stops abruptly when the bearded or hairy portions of the face are reached. The lesions do not itch, and no papules or vesicles have ever been reported. The edges of the patches are not elevated, and no signs of inflammation are seen. The disease is very contagious, runs in families, and has periods of seasonal exacerbations. It almost dies out in the wintertime, only to flare up in the hot, moist summertime.

The parasite appears as elongated straight or short curved mycelia, with single spores or spores in chains, when seen in potassium preparations. The culture begins as a white downy colony, which later becomes a deep greenish black.

The disease should not be confused with *tinea versicolor*, vitiligo, syphilitic leukoderma, macular leprosy or seborrheic dermatitis.

After removal of the scales by scrubbing with sand soap and water, the disease responds nicely to the usual antiparasitics mentioned in the previous paragraphs.

Tinea Nigra (sometimes called *pityriasis nigra*) — This is the second member of the group of mycotic skin diseases due to a member of the family of the *Cladosporia*. It has been reported in southern China, Ceylon, Burma and the southern part of India and is fairly widespread and commonly seen in all these regions. The eruption is characterized by the gradual development of dull black, slightly elevated and slightly scaly, nonpruriginous, various sized spots on any part of the body except the face.

Potassium preparations of the scales show pigmented elongated mycelial threads and oval or round spores. On the usual mediums a blackish faviforme culture, which grows slowly into the depth of the medium, is produced in about six weeks. The parasite is called *Cladosporium mansonii*. The disease responds readily to the usual antimycotic applications.

Keratosis Nigricans Palmaris — The third member of this group is *keratosis nigricans palmaris*, which has been reported only from several different points in Brazil. It is characterized by pinhead size, deep brown or black papules on the palms, the wrists, the palmar and lateral surfaces of the fingers and the

interdigital spaces of the hands. The papules gradually coalesce to form slightly raised plaques of irregular contour and with polycyclic borders. There is no itching, erythema or signs of inflammation. It is due to *Cladosporium werneckii*, which shows branched mycelia and oval spores in potassium preparations of the scales and grows easily on the usual mediums as a brown or deep green moist colony. The disease has been reproduced in the guinea pig and in man from these cultures (Sartory, Rietman and Meyer.²²) The disease responds easily to treatment.

DERMATOMYCOSES CAUSED BY THE ALEURIOSPORE GROUP

The only member of the group well enough studied to be mentioned here is *tinea albigena*, otherwise known as *khi-huen*. The disease has been known scientifically since the later years of the last century and is widespread in southern Asia. It has been reported from southern India, Indo-China, Ceylon, New Guinea, Borneo, Sumatra, Java and Brazil.

The eruption is localized almost exclusively on the palms and soles. Three stages have been described by Nieuwenhuis²³ the vesicular, the chronic and that of depigmentation and atrophy. It begins as an itchy papule which is quickly transformed into a vesicle surrounded by a narrow zone of intensely acute inflammatory reaction. Repeated attacks of new blisters occur until large areas of the palms and soles are involved. The disease is undoubtedly spread by scratching, which tears off the top of the vesicle and disseminates its serous contents. Since there is a tendency to spontaneous recovery, the disease becomes chronic with the production of thick, fissured and very painful calluses at the site of the vesicle. The disease may be so extensive on the soles that certain individuals, and especially Europeans, are unable to walk or work. In the chronic stage, although itching is present it is not nearly so severe as in the vesicular, or acute, stage. Gradually the disease penetrates deeper into the skin until the pigment function is completely destroyed. Permanent and complete depigmentation of these areas is the result. Langeron²⁴ mentions a fourth stage in which the eruption, after many years of chronicity, may spread to the wrists, forearms, backs of the hands and feet, and the ankles. The nails may also be involved.

The eruption is symmetrical and is due to a simultaneous contagion, rather than a trophic disturbance, as was originally thought.

The parasite is a hyphomycete with aleuriospores and belongs to the genus *Glenospora*. It is called *Glenospora albicans* and it grows very slowly on Sabouraud's medium as a rough surfaced colony which has a white color at first and later a lighter brown.

The disease should be thought of because of its localization to the palms and soles. It shouldn't be confused with acromycosis, herpes circinata, tokelau pinta, *pityriasis versicolor*, *keratosis palmaris et plantaris hereditaria*, arsenical keratoses or tylotic eczema. The different stages of the production of the fully developed disease, plus the permanent depigmentation and the laboratory studies, should make the diagnosis easy if the disease is kept in mind.

22 Sartory A, Rietman B and Meyer J. Contribution a l'etude d'une epidermomycose bresilienne palmaire noire. *Compt rend Soc de biol* 104: 878 (Juli 4) 1930.

23 Nieuwenhuis A W. *Tinea albigena* und die Zuchtung ihres Pilzes. *Arch f Dermat. u. Syph* 80: 1 1908.

24 Langeron. *Nouvelle pratique dermatologique* p. 69.

19 Jeanselme F. *Cours de dermatologie exotique*. Paris: Masson & Cie 1904 p. 239.

20 Fontoynt M and Carougeau L. *Etude sur le hodi potsy*. *Bull Soc. path exot* 15: 424 1922.

21 Langeron M. *Nouvelle pratique dermatologique* p. 359.

Nieuwenhuis²³ recommends that the treatment be begun early and be carried out vigorously and continuously in order to cure it before the chronic stage is reached. He uses wet compresses, renewed at frequent intervals during the day and night for several days, of 10 per cent chrysarobin in equal parts of alcohol and ether. Tincture of iodine painted on in thick layers for fourteen days may also be used. In the chronic stage the horny masses must be removed before one applies this treatment.

TROPICAL DERMATOMYCOSES PROBABLY DUE TO TRICHOPHYTONS

Tropical Ringworm of Sabouraud—This is the name given by Castellani to a skin disease found by Sabouraud²⁵ in patients coming back to France from Indo-China, Tonkin and Japan. Castellani²⁶ reported the same eruption in Ceylon and now the disease is believed to be widespread in the hot, humid portions of the Far East.

The eruption is intensely pruriginous and very chronic. It begins on the uncovered parts of the body and especially on the legs with the formation of erythematous round spots whose surfaces are covered with a very fine layer of scales. The spots enlarge peripherally, clear in the center and form complete or incomplete rings, resulting finally in large plaques with polycyclic borders. The centers of the plaques are brownish and smooth. The scaly borders may be slightly elevated or they may merge into the surrounding normal skin. At times vesicles and papules form on the borders of the lesions. Itching increases with the spread of the disease, and in long standing cases the borders of the plaques become distinctly lichenified.

Curved, banana shaped, mycelial filaments without the double contoured membranes seen in true trichophytosis are found in large numbers in potassium preparations of the scales. Between the mycelia occur oval or round spores of various sizes. The parasite has never been cultured and never transmitted from man to man or to laboratory animals.

It is almost mandatory that patients afflicted with this disease leave hot, moist climates before the disease will respond to treatment. The usual antimycotic preparations will then suffice.

Although not definitely proved, it is probable that this is a true dermatomycosis.

The second member of this group, *tinea nigroscirrata*, was described by Castellani²⁷ in Ceylon. It is characterized by the formation, only on the neck or scrotum, of black annular lesions with elevated and often crusty borders. The lesions are all about the size of a large pea. The skin surrounding the lesions is pigmented a deep brown for a distance of 1 to 2 centimeters. Potassium preparations of the scales show mycelial elements and round spores both with double contoured membranes. No cultures or inoculations succeeded.

The disease is benign and may disappear spontaneously or after the application of mild forms of iodine, chrysarobin, ammoniated mercury or other medicaments.

The mycetomas, which are so prevalent in the tropics, will be discussed in another portion of this symposium.

MEDICAL ENTOMOLOGY IN RELATION TO TROPICAL DERMATOSES

MAXIMILIAN E. OBERMAYER, M.D.
LOS ANGELES

Diseases due to animal organisms, especially the arthropods, vary somewhat in geographic distribution and with climatic conditions, yet most of such dermatoses which commonly occur in the United States are also encountered in all other parts of the world and knowledge of the disorders seen at home will aid in the management of such dermatoses in the tropics. Consequently a brief outline of the important diagnostic and therapeutic points relating to these diseases appears indicated, particularly since most of the information derived from experience with arthropod borne disease in this war is in the hands of the military personnel and little of it has been published. Some recent data, published mainly by British investigators, and information obtained from the Army Medical Museum in Washington, D. C., and from private sources are incorporated in this article.

Of diseases caused by arthropods the following deserve attention:

DISEASES BORNE BY MEMBERS OF THE CLASS ARACHNIDA

DISEASES CAUSED BY MITES AND TICKS

Scabies—Human Scabies. Routine knowledge of this important and ubiquitous disease will be taken for granted. Only some less generally known points which may be of service will be covered.

Infestation is occasioned by more or less intimate contact with an infested person. Sleeping with a person with the disease or in a bed recently occupied by such a person is the most common method of contracting the disease, but in a considerable proportion of cases the infestation is of venereal origin. However, so transitory a contact as a simple handshaking may suffice to transmit the disease. Scabies is so highly transmissible that it has been an important source of loss of man-days in all armies in all wars. Scabies should be considered in every case of pruritic eruption, especially if the hands and the genitalia are involved. Once the diagnosis is made, men who have been in daily contact with the patient should be examined.

To recover *Sarcoptes scabiei* from a lesion needs an experienced examiner. Under field conditions the presence of burrows or papulovesicles in their characteristic location and the history of nocturnal pruritus should suffice to make the diagnosis of scabies. The penile and scrotal lesions commonly are infiltrated papules, and the diagnosing of scabietic papules as lesions of early syphilis and vice versa, is a deplorable and unfortunately not uncommon error. On the other hand since scabies is frequently venereal in origin the simultaneous presence of the two diseases is not improbable.

Latest research in the treatment of soldiers¹ has shown that of the many medicaments in common use for scabies only two, sulfur ointment and benzyl ben-

25 Jeanselme. Cours de dermatologie exotique, p. 236.

26 Castellani, quoted by Langeron, p. 374.

27 Castellani, quoted by Langeron, p. 375.

This paper is a symposium on "Tropical Diseases of the Skin," published under the auspices of the Section on Dermatology and Syphilology.

¹ Mellanby, Kenneth, Johnson, C. C., and Barkley, W. C. The Treatment of Scabies. Brit. M. J. 2: 1 (July 4) 1942.

zoate, are satisfactory Benzyl benzoate, the main ingredient in Peruvian balsam, was found to be fully effective in the form of a lotion or emulsion A 10 per cent sulfur ointment or a vanishing cream containing 10 per cent of sulfur applied three times in routine fashion is efficacious, while sulfur lather preparations are not Tests with preparations containing rotenone have been unsatisfactory, furthermore, derris root emulsions are notorious for causing dermatitis Investigations suggest that pyrethrum extracts are not particularly valuable for treating human scabies, and pyrethrum too is well known as an epidermal sensitizing agent

The case of ointment versus liquid preparations may be stated thus If the patient applies the medicament himself, the use of ointments, even though they are "messy," is safer, for it has been found¹ almost impossible for a patient to apply either liquid preparations or creams satisfactorily to himself

The classic method of treating scabies made mandatory a thorough scrubbing of the skin under a hot shower with liquid soap and a flesh brush, to remove the tops of all lesions While the long soak in a hot bath followed by scrubbing is a desirable feature if soldiers are treated in a hospital or sick bay, it is useful to know that treatment can be carried out successfully when such facilities are not available,¹ a point of great practical importance in desert warfare

Prescriptions 1, 2 and 3 are recommended for routine use I have used the ointment given in prescription 1 for years with satisfactory results² As an after-treatment the application of a simple antipruritic shake lotion is desirable The formula³ given in prescription 4 is helpful Under no circumstances should the course of treatment be repeated unless the presence of a living organism is demonstrated since the dermatitis resulting from overtreatment (especially with sulfur) may occasion a greater loss of man-days than the infestation

The most frequent complication of scabies is pyogenic infection, especially under field conditions, it tends to

PRESCRIPTION 1—Sulfur-Peruvian Balsam Ointment

	Gm or Cc.
R Precipitated sulfur	12 0
Peruvian balsam	12 0
Petrolatum	
Hydrous wool fat	aa q s. ad 120 0

PRESCRIPTION 2—Benzyl Benzoate Lotion

	aa q s ad 120 cc
R Soft soap	
Isopropyl (or ethyl) alcohol	
Benzyl benzoate	

be more severe in seborrheic individuals and is best treated with a 5 per cent sulfadiazine or sulfathiazole cream

Scabies of Animals Organisms related to the acarid responsible for human scabies cause a similar disease in animals and birds which may be contracted by man

Scabies of the horse This disorder is of common occurrence in military stables Soldiers caring for

horses with scabies frequently contract the disease, which has a short incubation period, signs often appear on the day infestation occurs Differentiation from human scabies rests on the absence of burrows and the differences in location and appearance of the lesions The lesions, which are bright red, conical, follicular papules, usually capped by a hemorrhagic crust, appear on the flexor surfaces of the arms, the breast and the

PRESCRIPTION 3—Benzyl Benzoate Emulsion

	Gm or Cc.
R Benzyl benzoate	200 0
Stearic acid	20 0
Triethanolamine	5 0
Water	q s. ad 1 000 0

Melt the stearic acid with the benzyl benzoate on a water bath Mix the triethanolamine with half the quantity required of warm water and pour into the stearic acid benzyl benzoate mixture cooled to about 30 C, shake to form an emulsion and add enough water to produce the required volume

PRESCRIPTION 4—Antipruritic Shake Lotion

	Gm or Cc
R Menthol	aa 0 5
Phenol	
Zinc oxide	
Talc	aa 20 0
Glycerin	15 0
Water	70 0

abdomen down to the belt line, the genitalia are almost never involved A peculiar feature is the appearance of an urticarial wheal when the lesions are scratched (factitial urticaria) The disorder runs a mild course and subsides spontaneously Ordinary antiscabietic treatment may be used if necessary

Scabies of the dog This disease is frequently encountered in tropical and subtropical countries In human beings it is characterized by the appearance of red macules and papules, occasionally capped by minute vesicles, urticarial reactions are common The location of the eruption depends on the point of contact, the neck and the upper part of the chest are most frequently involved, but the cheeks, postauricular region and scalp are also common sites The disorder responds promptly to antiscabietic therapy

Scabies of the cat This disease, most common in countries in which neglected cats abound, is caused by a smaller parasite which is not strictly an acarid On human patients the lesions, which are similar to those of strophulus, appear as small papules capped by a minute vesicle Antiscabietic treatment is not required, the application of an antipruritic shake lotion is usually sufficient

Rat Mite Dermatitis—The disease is caused by *Lyponyssus bacoti*, which is of significance because it is a carrier for the virus of endemic typhus fever The lesions consist of wheals, papules and vesicles, which may become infected as a result of scratching In adults the eruption is usually limited to the ankles, but it may appear in small patches elsewhere Buildings infested with the mites must be gone over by an exterminator squad

Food Mite Dermatitis—Other mites closely related to acarid and predominantly of the *Tyroglyphus* variety, are present in such materials as cheese meal, copra dried fruit and linseed oil Persons such as pickers

² Blecker S W and Obermayer M E. Modern Dermatology and Syphilology Philadelphia J B Lippincott Company 1940
³ Pillsbury D M Sulzberger M B and Livingood C S Manual of Dermatology Philadelphia W B Saunders Company 1942

or dock workers, who come in contact with infested material may show a pruritic eruption which is known variously as "grocers' itch" or "copra itch." The lesions, small, pointed erythematous papules which itch intensely, develop on the parts of the body which come in contact with the material, the extensor surfaces of the hands and forearms are chiefly involved. The application of an antipruritic shake lotion is therapeutically sufficient.

Acarodermatitis Urticarioides—Grain itch is caused by a macroscopic, grayish yellow mite, *Pediculoides ventricosus*, which lives on the larvae, caterpillars and chrysalis of various organisms noxious to grain, the eruption occurs among men who sleep on infested straw or straw mattresses. The extent of the eruption depends on the number of organisms and the sensitivity of the patient. In mild infestations it is limited to the regions in most intimate contact with the infested material, in the more severe forms of the disease the entire trunk, the neck and even the face may be involved. The lesions are small bright red papules often capped by a vesicle which becomes a pustule. The larger lesions are somewhat urticarial. All the papules may appear hemorrhagic, but they pale out completely on glass pressure. Diagnosis is sometimes difficult because the eruption may resemble varicella, and it may be accompanied by such mild constitutional symptoms as fever and slight albuminuria. However, the characteristic umbilication of the varicella vesicles is absent and the pruritus is intense. The history of contact with straw is suggestive, especially if the troops have been billeted about farms. Treatment consists in application of an antipruritic shake lotion. Infested straw ticks should be burned.

Wood Tick "Bites"—Ticks (*Ixodes*) are readily visible organisms which penetrate the epidermis by means of a lancet shaped under lip until the head is more or less embedded in the skin. The penetration of the tick is usually unnoticed by the patient, a circle of erythematous reaction appears only if the patient is hypersensitive. Ticks are parasites of cattle, dogs, rabbits and man. In temperate climates there is a seasonal prevalence in May, June and July. Men should be examined carefully for ticks because of the role of the parasites in spreading Rocky Mountain spotted fever, tularemia and exanthematous fever of the Mediterranean, São Paulo typhus and Central African relapsing fever. Soldiers should be instructed not to remove ticks with the bare fingers, for if an attempt is made to remove the organism by force the lower jaw is left in the wound and may cause a prolonged purulent discharge unless removed surgically. It is better to suffocate the tick by the application of a material such as liquid petrolatum, glycerin or kerosene. With such treatment the head is spontaneously retracted in several minutes or hours and the tick falls off.

Trombidiosis—Jigger bites (trombidiosis) are produced by larvae (*Leptus autumnalis*, harvest mites, redbugs) of several members of the *Trombidia* family which live on flowers, grasses, shrubs and grain (buckwheat) and on the ground near such vegetation. The larvae live independently and feed on various animals (mice, snakes and man). The organisms, which are active from spring to fall, produce lesions at the point of contact, they commonly attack the skin below a tight constriction, such as a garter or a belt. The initial

erythematous macule is followed by an intensely pruritic papule surrounded by an erythematous halo, which may be hemorrhagic, the larva may sometimes be seen in the center of the papule as a point of brick red color. The lesions may be of other types, e. g. minute hemorrhagic puncta, urticarial wheals or lesions resembling lichen urticatus. The bite itself is usually not noticed, the patient's attention is aroused by the intense itching, which is especially evident at night when the patient has become warm in bed. The larva falls off in forty-eight hours or less and is consequently gone when the patient seeks medical attention. The lesions persist for an uncommonly long time. The secondary infection which usually ensues is often extremely persistent, and the response to treatment is less satisfactory than with other forms of secondary pyogenic infections. Occasionally there is initiated a chain of generalized skin sensitization with eczematous "id" lesions which require weeks or months to heal.

Trombidiosis is of military importance because partial disabilities from scratch infection may assume large proportions among troops in warm climates. In addition, in the Far East trombiculae present another and more serious danger, for the organisms transmit the *Tsutsugamushi* group of Rickettsial diseases, namely the Japanese River fevers, which are identical with Malayan scrub typhus.

PRESCRIPTION 5—Compound for Trombidiosis

	Gm or Cc
R Benzocaine	20
Flexible collodion	150
(Bottle with rod in stopper)	

Vigorous measures for the prevention of jigger bites should be taken in regions where there is thick, tall grass, especially during the late summer months. Prophylaxis consists in the application of 5 per cent sulfur in talcum as a dusting powder. A warning about the possibility of sulfur dermatitis should be given especially in the case of men with dry or poorly pigmented skins.

Thrice daily applications of a 2 per cent rotenone solution (such a preparation is available from the Abbott Laboratories) have been used for treatment, this therapy has the disadvantage that dermatitis frequently ensues, especially when the solution is applied to the genitalia. Application of an antipruritic shake lotion will allay the itching. Twice daily application of the preparation given in prescription 5, recommended by R. L. Sutton Jr., has proved effective.

It is essential to recognize secondary pyogenic infections early and to treat them by local applications of a 5 per cent sulfathiazole or sulfadiazine ointment. It is also important to protect the sites of the lesions from contact with rough woollen clothing, so that development of contact dermatitis may be prevented, once this complication has developed the man should be sent to a hospital, because field conditions do not allow the limitation of activity necessary to overcome the cutaneous irritation.

SPIDER "BITES"

The most important poisonous spider—and the only one found in the United States—is the female of *Latrodectus mactans*, known as the black widow. The spider is commonly found on refuse heaps in buildings and

stables. Pain in the region of the bite and intense regional swelling may be followed by such grave constitutional symptoms as spastic cramps of the extremities, rigidity of the abdomen with nausea and vomiting, headache, ringing in the ears, dizziness, pain throughout the body, a rise in blood pressure of 30 or 40 mm and a state of anxiety. Generalized toxic erythemas are not uncommon. The bites may be inflicted on any part of the body but frequently occur on the genitalia or buttocks through exposure in an outdoor privy.

Treatment, according to Frawley and Ginsberg, should consist in bed rest, a soap solution enema, increase in the intake of fluids, intravenous administration of 20 cc of a 10 per cent solution of magnesium sulfate (to combat hypertension and spasticity of the muscles), hypodermic administration of morphine (to control pain) and peroral sedation. Tincture of iodine should be applied immediately to the wound, followed by wet dressings with potassium permanganate (1:8,000).

DISEASES BORNE BY MEMBERS OF THE CLASS INSECTA

DISEASES CAUSED BY LICE AND BUGS

Insects are of much greater importance in military medicine than in civil practice. Insects spread many epidemic diseases, and their "bites" may cause disability of formidable duration if adequate measures for the prevention of secondary eczematization and pyogenic infection are not instituted immediately after the "bite" is inflicted.

In general an insect "bite" appears as a central punctum in an initial macule, wheal or papule, the degree of inflammatory reaction varies with individual hypersensitivity. Insect "bites" often appear as asymmetrical groups and it is best to consider them as a diagnostic possibility in every pruritic papular and urticarial eruption.

Pediculosis—It appears certain that lice, the agents of pediculosis, leave a febrile patient and try to find other hosts, a point of epidemiologic importance. It is also known that small lice may be distributed in the open air by wind and may be blown on to the outer garments of those engaged in dealing with infested persons. It has been shown that head lice may be acquired from the upholstered backs of seats and chairs, from brushes and combs and by passage from hat to hat (e. g. in schools or mess rooms). Similarly, the body louse may spread when groups huddle together for warmth.

The military significance of pediculosis is illustrated by the statistics showing that during World War I (in 1917) the casualty clearing stations of the British Second Army admitted more than 10,000 men for inflammatory disorders of the skin, caused mostly by lice.

1 *Pediculosis Corporis*. *Pediculosis corporis* is the most important of the three forms of this infestation, because the body louse, its agent, transmits epidemic typhus, trench fever and recurrent febrile spirochetoses. The body louse is better called the clothing louse, since it inhabits the clothing and only feeds on the skin, its eggs are laid about the seams of clothing, where they should be searched for. In most instances the patient presents only excoriations, usually

linear, on portions of the body where the clothing is in intimate contact, especially the shoulders and about the waist and buttocks. The incidence of infestation increases sharply in men who have little opportunity to bathe, especially if quarters are crowded. The spread of diseases by the clothing louse is aided by the European custom of popping lice between the thumbnails and the American and Australian habit of crushing them with the teeth. Since the spirochete of the recurrent febrile spirochetoses is transmitted by inoculation incident to rupturing of a louse and cannot be transmitted by the louse's "bite," these customs should be discouraged.

Treatment consists in autoclaving of the clothing for fifteen minutes and thorough scrubbing of infested men with soap and brush. Secondary pyogenic infection or scratch dermatitis must be treated.

2 *Pediculosis Capitis*. The only important complication of this otherwise harmless infestation is the secondary pyogenic infection which is produced by scratching, usually on the nape of the neck or the occipital and temporal regions, and is often accompanied by enlargement of the posterior cervical nodes.

The older methods of treatment by applications of equal parts of kerosene and olive oil, acetic tincture of

PRESCRIPTION 6—Compound for *Pediculosis*

R. Lauryl thiocyanate	25%
(du Pont technical grade distilling above 236 C)	
Paraffin oil (B P 325 C)	75%

PRESCRIPTION 7—Compound for *Pediculosis*

R. Lethane 384 special	50%
(Rohm and Haas, Philadelphia)	
Refined paraffin	50%

larkspur, N F VI, or 1:500 mercury bichloride solution are gradually being replaced by other methods. I use cuprex (a proprietary copper compound) solution. Busvine and Buxton⁴ reported great success from the use of a 1 per cent rotenone emulsion or the compounds given in prescriptions 6 and 7. They recommended applying the compound once, with spoon or pipet, to four areas of the scalp on each side and allowing it to remain for ten days before shampooing, 8 cc of the material per patient is sufficient. Patients' caps and helmets, of course, must be sterilized. The use of vinegar to soften the gelatinous coating that attaches the nits to the hair should be discouraged, contrary to popular belief, it has been shown that the substance is not dissolved after soaking in a 10 per cent acetic acid solution for several days.⁴ If many men are infested, it is advisable to clip the scalp routinely.

3 *Pediculosis Pubis*. Infestation with the crab louse would be insignificant except for the discomfort produced by the itching were it not for the disabilities which result from irritating methods of treatment. Neither the old blue ointment nor rotenone preparations should be used, and shaving of the pubic hair which causes considerable discomfort during the early stage of regrowth, is unnecessary. The best method of treat-

⁴ Buxton P. A. The Louse. Baltimore: Williams & Wilkins Company 1940.

ment consists in application of 1 to 2 ounces of cuprex. The solution is rubbed into the involved regions and ten minutes later rubbed in again, it is allowed to act for one hour, and the region is then carefully washed with soap and water. Pediculi on the eyelashes may be removed by contact with an applicator saturated with cuprex for one minute. If cuprex is not available, mercury bichloride 1:500 in 70 per cent alcohol may be applied twice daily, but it should be remembered that the skin is occasionally sensitive to mercury and that eczema may result. Failures often result from not paying sufficient attention to the perianal hairs.

BEDBUG "BITES"

Cimex lectularius is of epidemiologic significance as the transmitter of the recurrent febrile spirochetoses. Hence the remarks on the danger of inoculation by rupture of lice apply to rupture of bedbugs as well.

The lesions produced by *Cimex* are usually firm, conical papules. However, if hypersensitivity is pronounced, large, sometimes hemorrhagic, bullae may form. The grouping of lesions in pairs and triplicates, fairly close together, is a characteristic feature.

Treatment consists in extermination of the insects. The only method which gives absolutely certain results is fumigation with hydrocyanic acid. Mercury bichloride solution 1:500 kills the eggs when poured into cracks and crevices of furniture, floors and walls, and fumigation with sulfur will kill the parasites. A good general insecticide, cheap and harmless, which may be used for spraying floors and walls, is made by dissolving three parts (by weight) of soft soap in fifteen parts of water and slowly adding kerosene while stirring constantly until no more will emulsify.⁴ This concentrated emulsion can be stored in bottles, it is diluted 1:20 for use.

DISEASES CAUSED BY FLEAS

Flea "Bites"—Fleas are chiefly important intermediary hosts for the agents of such serious diseases as bubonic plague, exanthematous and murine typhus and various bacteria, tropical protozoa and worms. The flea jumps on and off the host and does not confine itself to one host. In addition to human fleas, many varieties of animal fleas attack man when hungry, those of most interest to man are the fleas of dogs, cats, rats and squirrels. Confusion arises from the frequent erroneous designation of these fleas, in sandy regions, as "sand fleas," a term which is correct only for the penetrating, strictly tropical sand flea (*chigoe*). Animal fleas infest buildings or even the sand itself in sandy areas and attack human beings.

A flea puncture results in the formation of an erythematous macule or wheal with a central hemorrhagic punctum (*purpura pulicosa*). Giant urticaria may result if the patient is hypersensitive. Some persons are immune.

Treatment consists in the application of an anti-pruritic shake lotion.

Chigoe—*Chigoe* infestation, or dermatophylaxis, is a cutaneous disorder produced by the sandflea, or *chigoe*, which is encountered chiefly in Central America, the West Indies, the northern part of South America, Africa and India. It is principally a disease of the tropics but occasionally occurs in the temperate zone. *Chigoe* infestation is known under various native designations, of which *nigua* and *chigoe* itch are the most common. In the United States trombidiosis, or jigger

bites, is frequently confused with dermatophylaxis, although the two disorders are caused by entirely different organisms and run different clinical courses.

The minute insect which is responsible for dermatophylaxis belongs to the family Sarcopsyllidae and is named *Sarcopsylla* (*Pulex*, *Tunga*, *Dermatophilus*) *penetrans*, it is the most completely parasitic of the species of fleas. In appearance it resembles *Pulex irritans*, the common flea, except that its proboscis is longer. Sand fleas live in dry, sandy soil and feed on the blood of various animals. After impregnation, the female attaches itself to the skin of man and that of many animals, especially swine, rats and mice, and pierces it obliquely, so that all except the last two segments of its body become embedded. Sucking blood for several days increases the size of the insect to several millimeters. If left undisturbed, it remains on the host and lays a large number of eggs, which hatch in eight days and after three weeks become mature adults.

The cutaneous lesion produced by the sand flea is at first a shallow burrow, at the opening of which the posterior part of the insect is visible as a brownish red dot. Later there develops a pruritic papule, several millimeters in diameter, which suppurates. Abscesses and ulcers, accompanied by lymphangitis, may be formed, such ulcers are resistant to treatment. Secondary infection, gangrenous or tetanic, may necessitate amputation. Lesions as a rule are located on the feet, at the corner of or beneath the free margin of the toe nails or on the ankles, however, since soldiers often sleep on the ground, sites other than the feet (e.g. the anogenital region) are often affected.

Treatment depends on the stage of the disorder. If suppuration has not yet taken place, the affected part should be thoroughly cleansed with soap and water and the insect skilfully extracted by means of a blunt, heated needle. Great care should be taken not to rupture the flea while attempting to extract it, because if part of it or some of its eggs remain in the burrow, subsequent suppuration is inevitable. If suppuration has occurred or if the attempt to remove the insect is only partially successful, the cavity should be subjected to forceful cleansing and cauterization with pure phenol, followed by the immediate application of alcohol. The wound should be dressed with a 5 per cent sulfathiazole or sulfadiazine cream.

Infestation can be prevented by putting up camps away from *chigoe* infested localities. The neighborhood of native villages should be avoided, and the ground should be swept or fired. Walking barefoot should be discouraged when the disorder is prevalent.

DISEASES CAUSED BY OTHER INSECTS

Other insects which attack human beings are gnats, mosquitoes, bees, wasps and flies. The resulting lesions are macular, papular, hemorrhagic or urticarial. If the patient is hypersensitive, the reaction may be so extensive as to simulate angioneurotic edema, and severe constitutional symptoms may even be present. The larva of the bot fly produces painful inflammatory nodules, and the "bite" from the black fly causes the formation of a pruritic nodule often with the accompaniment of swelling of the regional lymph nodes and regional pain and stiffness, the reaction is often delayed for twelve to twenty-four hours and persists for days.

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YAWS, CUTANEOUS LEISHMANIASIS
AND PINTAHOWARD FOX, MD
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Of the three diseases described in this communication, yaws and cutaneous leishmaniasis are prevalent in many parts of both hemispheres. Pinta is largely confined to the American tropics. Few members of our armed forces are liable to contract either yaws or pinta, as these diseases are due to lack of personal hygiene and are not usually acquired through insect vectors. However, our medical officers in certain tropical regions will doubtless have to render medical aid to native populations and will then see many cases of these diseases.

Cutaneous leishmaniasis is, however, contracted both by personal contact and by the bite of one of several species of *Phlebotomus* or occasionally of other insects. It is therefore probable that some of our armed forces will be infected by this disease.

Yaws and pinta are confined almost exclusively to the tropics, whereas cutaneous leishmaniasis is seen in both tropical and semitropical regions.

YAWS

Yaws is the term used in British and American colonies for the disease known as *frambesia tropica*. In French speaking colonies the term *pian* is used. Yaws is an infectious disease caused by *Treponema pertenue*, an organism which is morphologically identical with the spirochete of syphilis. Its discovery by Castellani followed shortly after that of *Treponema pallidum*. The disease is confined almost entirely to the Negro race. The geographic distribution is widespread in parts of equatorial Africa, many islands of the Pacific including the Philippines, the Malay States, Burma and Thailand. In the western hemisphere it is extremely prevalent in Haiti, Santo Domingo and Jamaica as well as in some equatorial areas of South America.

Yaws resembles syphilis in some respects but shows enough differences for it to be regarded as a separate, though closely allied, disease. Infection with yaws is almost invariably extragenital, the initial lesion often occurring on the leg. The disease is probably acquired most often through personal contact, just as impetigo contagiosa is carried from one child to another. Ideal conditions for this method of transmission of yaws exist among native races in tropical regions, who sleep together in crowded huts and wear little or no clothing. There is no doubt that yaws may also be transmitted by flies. In Jamaica, Kumm and Turner noted swarms of hippelates flies on lesions of yaws and were able to find 300 spirochetes in the diverticulum of a single fly. It is thought that the infection is simply due to regurgitation by the flies when they alight on an abraded surface.

Yaws is required most often in childhood. Transmission through the placenta is, however, unknown. Yaws

is never congenital and fails to show any stigmas such as saddle nose, Hutchinson's teeth or interstitial keratitis, which would correspond with those of congenital syphilis. In India, Powell observed 17 pregnant women in the florid stage of secondary yaws and found that all gave birth to babies who remained free from yaws.

Another feature which differentiates yaws from syphilis is the complete absence of lesions of the mucous membranes in the early (secondary) stage. There are no vaginal mucous patches, which accounts for the absence of venereal infection. However, in the late or tertiary stage destructive ulcerating gummas may be seen in the mucous membranes.

The cutaneous manifestations of secondary yaws show some striking differences from those of syphilis. The initial lesion, or "mother yaw," which is often absent, is of the same type as the common frambesiform eruption except for its much greater size. The typical secondary eruption appears about six weeks to three months after infection and consists of small papules, some of which disappear without further change, whereas others coalesce, soften and form rather typical amber colored crusts. This does not resemble any manifestation of syphilis but may be mistaken for impetigo. The eruption may be generalized and profuse or show a tendency to be localized about the mouth and in the anogenital region. At times the lesions form circles, which are spoken of as "ringworm yaws," though this does not resemble the annular papular syphilitid with its delicate raised border and hyperpigmented center, which is so characteristic of the Negro race. The eruption lasts from one to two years or even longer at times and disappears spontaneously without leaving any permanent trace.

Whereas the macular eruption (roseola) is the commonest one in syphilis, it is nearly always absent in yaws. This is not due to the difficulty in detecting it on the dark skin as those who have had experience with syphilis in Negroes will testify.

A peculiar eruption of yaws occurs on the soles and at times on the palms and is spoken of as "crab yaws" in the West Indies. This term is used to describe the difficulty in walking (like a crab) especially when the lesions are secondarily infected with pyogenic cocci. This manifestation consists of hyperkeratoses which are usually bilateral and which occur frequently toward the end of the secondary period. That it is an undoubted manifestation of yaws is proved by the presence of spirochetes beneath the scales and by the response to antisyphilitic treatment.

An infrequent eruption of yaws consists of pinhead size papules in groups. This has been called a "keratoid" eruption on account of its supposed similarity to keratosis pilaris. In my opinion it has a closer resemblance to lichen scrofulosorum.

Yaws again differs from syphilis by the complete absence of iritis or iridocyclitis. This is rather striking as syphilitic iritis is decidedly more common in the Negro than in the white race. There is also an absence in yaws of alopecia either of the diffuse or so-called "moth eaten" type. The statement frequently made that itching constitutes a feature of differential diagnosis between syphilis and yaws is unwarranted, in my opinion. It is agreed by all that the cutaneous lesions of syphilis are essentially nonpruritic and I think the same is true of yaws.

The late destructive or tertiary manifestations of yaws are clinically indistinguishable from those of syphilis.

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Excellent articles on pinta have recently been published by V. Pardo-Castello and Ismael Ferrer (*Arch. Dermat. & Syph.* 45:843 [May] 1942) and by Herman Heerman (*Am. J. M. Sc.* 205:611 [April] 1943).

Full descriptions with bibliography of the three diseases described may be found in *Syphilis: Diagnosis, Prevention and Treatment of Tropical Diseases*, ed. 6 (Philadelphia: Blakiston Company, 1943), edited by Col. Richard P. Strong. Also chapters by Howard Fox in *Clinical Tropical Medicine*, edited by Z. Hercovitz (New York: Paul B. Hoeber, Inc.) to be published.

and consist of gummas of the skin and mucous membranes and osteoperiostitis of some of the long bones, synovitis and tenosynovitis, often producing severe mutilation in neglected cases. The tendency of secondary manifestations of syphilis to be followed by a long period of latency is not the rule in yaws, as in this disease the late changes may follow soon after or even before the secondary lesions have disappeared.

Yaws is a milder infection than syphilis, as is shown by its comparatively infrequent involvement of the central nervous and cardiovascular systems. The majority of investigators have failed to find abnormalities in the spinal fluid in yaws, and the majority also consider tabes and paresis to be nonexistent or at least extremely rare in yaws. Similar opinions are expressed about lesions of the cardiovascular system. Although Choisser found 10 cases of aneurysm in a series of over 700 necropsies in Haitian Negroes, there was no positive proof that they had not been caused by syphilis. The chief evidence was based on the fact that these lesions were found in natives who had lived in rural districts where yaws rather than syphilis was extremely prevalent. The prognosis as to life in yaws is good. Manson-Bahr stating that, "judging from the statistics collected by Nicholls, the mortality must be very small indeed."

The clinical diagnosis of yaws is usually easy in the secondary stage (frambesiform eruption), though in the late stage it becomes difficult or impossible. Spirochetes can be demonstrated with great ease in the frambesiform lesions after removal of the crusts. The organisms have also been found in the lymphatic glands, spleen and bone marrow. They have, however, never been demonstrated in the blood, though successful inoculations have been made in monkeys from the blood of persons suffering from yaws. Differences between syphilis and yaws have been noted in bones on roentgenographic examination, yaws showing a high incidence of osteoporosis.

Animal experiments with monkeys and rabbits have added to our knowledge of yaws. It has often been possible to establish the diagnosis of yaws by inoculation of monkeys, in which a typical frambesiform eruption has been produced. According to Pearce and Brown, a differential diagnosis between syphilis and yaws can usually be made by intratesticular inoculation of rabbits. Inoculation with *Treponema pallidum* usually produces a hard lump, with frequent dissemination to the lymphatic glands, bones and viscera. On the other hand, inoculation with *Treponema pertenue* produces a local reaction spoken of as a granular orchitis.

Animal experimentations have also added to our knowledge of immunity in yaws. There is eventually complete cross immunity between syphilis and yaws, though there are differences in the immune state in the two diseases. Thus Schobl states that syphilis produces an immunity to itself quicker than it does to yaws and much quicker than yaws does to itself. Before the period of cross immunity is established it is possible for man and susceptible animals to acquire both diseases.

Serologic reactions with either complement fixation or flocculation tests are of no value in differential diagnosis, as syphilis and yaws respond similarly. Both diseases give close to 100 per cent positive reactions in the secondary stages with a gradual lessening of such reactions in the later stages.

Yaws responds unusually well to arsphenamine (or allied drugs) and to bismuth compounds, though mer-

cury does not act satisfactorily in the secondary stage, a feature which is considered diagnostic by Castellani. In the early stages the disease may be permanently cured by three successive injections of neoarsphenamine, though much more treatment is required in the late stage. Oral administration of acetarsone has been used with success, but, as Strong says, the expense of a complete course may equal that of three injections of neoarsphenamine. Bismuth has been widely used on account of its low cost for mass treatment of native populations.

There are three unusual diseases which in many cases are considered to be sequelae of yaws. They are gangosa, goundou and juxta-articular nodes. Gangosa is a severe destructive nasopharyngitis, a typical case being usually described as presenting a funnel shaped opening with the upper lip as its lower-border. The nasal septum and surrounding soft parts, the palate and even the eyes may be destroyed. It is thought to be a sequela of yaws, because it occurs in areas where yaws is endemic. Gangosa is seen in parts of equatorial Africa, in Guam, in the Fiji Islands and in the island of Dominica in the West Indies. The disease occurs in untreated persons and is practically incurable.

Goundou is an exostosis beginning in the nasal process of the superior maxillary bone, which forms a hard painless tumor, projecting downward and outward. It may attain the size of an apple and interfere with vision or destroy the eyes. The disease was first observed in Africa by McAllister, who spoke of the affected natives as "horned men." Goundou is thought by many to be a sequela of yaws because it often follows the frambesiform eruption and because heavy inoculations with *Treponema pertenue* fail to produce ordinary lesions of yaws. Some doubt the relationship to yaws and consider the disease to be osteitis deformans or other type of disease of the bone. The treatment is surgical.

Juxta-articular nodes consist of painless, hard enlargements occurring usually in the neighborhood of the larger joints, especially the elbows and knees. Similar lesions occur as late manifestations of syphilis. Spirochetes have been demonstrated both in the nodes supposedly due to yaws and in those due to syphilis. The course of the disease is exceedingly chronic but it responds slowly to antisyphilitic treatment. If desired, the lesions can be surgically removed.

CUTANEOUS LEISHMANIASIS

There are two types of cutaneous leishmaniasis which differ sufficiently to warrant their being considered as separate diseases. They are oriental sore, a purely cutaneous disease of the Old World, and mucocutaneous leishmaniasis, seen only in the Western Hemisphere. These two forms of the disease which involve the skin are caused by protozoa which are morphologically similar to each other and to the organism which causes kala-azar. They are round or oval bodies with a large kinetic nucleus and a small rodlike nucleus, and in cutaneous lesions they are found chiefly in endothelial cells and large mononuclear leukocytes. They can be demonstrated microscopically in scrapings from the edge of an ulcer or the under surface of a biopsy specimen stained by Wright's method. They can also be cultivated and are flagellated obligatory aerobes. However, in the so-called relapsing cases of oriental sore it is difficult or impossible to demonstrate the organisms.

1 *Oriental Sore*—Known also as Aleppo boil, Biskra button and Delhu sore, oriental sore is confined to the Eastern Hemisphere and has a wide geographic distribution. It is endemic on the Mediterranean coast of Africa and in Syria, Palestine, Armenia and the southern and eastern parts of Asia, including Iraq, Iran and parts of India and China. In Europe it occurs chiefly in Greece, Italy, Sicily, Cyprus and Crete.

The disease is transmitted both by the bite of several species of phlebotomus and at times by the common house and stable fly and also by personal contact. Both of these methods of transmission have been repeatedly proved. Dogs, especially those with lesions about the nose, may act as reservoirs of the parasites.

The incubation period varies from weeks to months or even a year or more at times. The disease begins as a tiny papule, which enlarges to form a plaque of 2 or 3 or even 6 or 8 centimeters in diameter. The lesions usually soften and discharge a sticky material which dries and forms crusts, beneath which is an ulceration with a pink, edematous areola. At times the lesions do not break down and ulcerate. Eventually the crusts fall and are apt to be followed by scars which may be rather deforming. The lesions are situated often on the uncovered parts (face and extremities), rarely on the trunk, and never on the palms, soles or hairy scalp. They may be single or multiple. In rare cases there may be 100 or more lesions. The name Aleppo boil is a misnomer, as the disease has no resemblance to a furuncle.

The course of the disease is self limited and usually disappears within a year, as the Turkish name *habel-seneh*, or "button of one year," would indicate. The disease causes no constitutional and only slight subjective symptoms. It leaves no sequelae except scars and is usually followed by permanent immunity. Occasionally the disease lasts for years, and it may recur. In both chronic and recurring types a tuberculoid structure is found on microscopic examination. The histologic structure of the ordinary type is that of a granuloma without any characteristic features.

A positive diagnosis can be made with certainty only by finding the causative organisms in smear preparations or by culture. In cases such as the relapsing (tuberculoid) type it is usually impossible to demonstrate the organisms either by direct microscopic examination or by culture. Here intracutaneous tests by cultures of killed organisms may be of great assistance. Such tests are positive in a large proportion of cases. The clinical diagnosis may be difficult in endemic regions, but other diseases must be considered, including ecthyma, syphilis, tuberculosis, blastomycosis and tropical and other ulcers. A feature which aids in differentiating blastomycosis is the failure of the latter disease to respond to treatment by antimony and potassium tartrate.

In the treatment of oriental sore, innumerable remedies have been tried. When the lesions are extremely numerous it is advisable to use intravenous injections of antimony and potassium tartrate. For the ordinary case with one or two lesions, freezing with solid carbon dioxide is recommended. X-ray therapy gives good results but this entails expensive apparatus as well as skill in its use. The so-called grenz rays have recently been used in Palestine with success in the treatment of the relapsing type, which has hitherto been resistant to all therapy. Prophylactic treatment con-

sists in personal hygiene and proper care of abrasions. To afford protection against the bites of the sandflies it is advisable to sleep under a net containing forty-five holes to the square inch and to use insect repellents by day. In endemic areas, infected persons should be treated and lesions should be covered by protective dressings.

AMERICAN LEISHMANIASIS

The mucocutaneous type (American leishmaniasis) is found in the Yucatan peninsula, in parts of Central America, especially Guatemala, and in every country of South America except Chile. The greatest number of cases is found in Brazil, followed in frequency by Peru, Bolivia and Paraguay.

The disease is seen chiefly in men as the result of their occupation as foresters, workers on tea plantations or collectors of chicle for chewing gum. American leishmaniasis occurs in moist tropical regions with luxuriant vegetation. One type of the disease, however, occurs on the slopes of the Andes at altitudes varying from 3,000 to 8,000 feet.

American leishmaniasis has more than the usual number of local names, no less than twenty-three different designations being given it in South America. In Peru alone there are six local names, one of which, "espundia," has been improperly used in textbooks for a disease that occurs in all the Americas. No one ever employs this local name in Brazil, where the greatest incidence of the disease is found.

The most striking clinical difference from oriental sore is the presence of lesions of the nose and throat in 15 or 20 per cent of the cases. These lesions are sometimes responsible for severe mutilations of the nose and upper lip as well as of the pharynx. The lesions of the nose and throat are usually preceded by one to fifteen years by cutaneous ulcers, which are extremely sluggish and may last for years. They do not show the tendency to spontaneous healing of oriental sore. It is also questionable whether a permanent immunity follows healing in the American type of the disease. It is probable that some species of *Phlebotomus* serves as the vector. There is, however, no known animal reservoir corresponding to the dog, which is often infected with oriental sore.

Laboratory investigations suggest that *Leishmania tropica* and *Leishmania braziliensis* are different species and the causative organisms of oriental sore and American leishmaniasis respectively. Noguchi found that cultures of these organisms as well as of *Leishmania donovani* (kala-azar) agglutinated only cultures of their respective organisms and concluded that there were three separate species of *Leishmania*. His work was confirmed by Kligler but not by others. However, Geiman has lately observed cultural differences when using the chorioallantoic membrane of the chick embryo. Cultures of *Leishmania tropica* were produced in twenty-six passages, whereas *Leishmania braziliensis* lived only to the second passage. It has also been suggested that certain organisms growing in symbiosis with *Leishmania* may be responsible for the clinical differences in the two types of the disease. Seidelin found a gram positive diplococcus which in 2 cases at least, was the only other associated organism, and in 1 case the skin was unbroken.

The treatment of American leishmaniasis is less satisfactory than that of oriental sore. The cutaneous lesions yield to antimony and potassium tartrate and this

remedy may cure the lesions of the mucous membranes. It may fail to cure the latter lesions, and better results have been obtained in Brazil by using a French arsenical preparation known as "Eparseno."

PINTA

The term *pinta* is derived from the Spanish word *pinta*, meaning a spot, and like many other tropical diseases, it has numerous local names. In Mexico it is called *mal del pinto* and in Colombia *carate*. These two countries show the greatest incidence of the disease, a careful survey in the southern half of the republic of Mexico having shown over 270,000 cases. The disease is also seen to a less extent in Venezuela, in Peru, in Ecuador in some of the islands of the West Indies and in Central America.

Pinta is an infectious disease caused by a spirochete which is morphologically identical with the organisms causing syphilis and yaws. It has no relationship to fungi, as was erroneously stated in textbooks for forty years.

The first clue as to the true nature of the disease was the discovery by Menk in 1927 that 75 per cent of cases gave a positive Wassermann reaction. With improved technic this was later found by the Mexican commission to be close to 100 per cent in the pigmentary stage of the disease. The causative organism was discovered in August 1938 by Grau Triana and Armenteros working in the laboratory of Saenz in Havana. In the following year Leon y Blanco proved that the disease could be inoculated in man and that it frequently showed primary and secondary lesions of nondescript character which lasted for months or years. He also proved that the disease was inoculable in persons suffering from latent syphilis.

Previous to the past four years it was thought that the manifestations of *pinta* were confined solely to pigmentary changes in the skin. The most characteristic change in color in the pigmentary or late stage is a leaden or slaty blue which occurs in patches or freckles, especially on the exposed parts of the body. Favorite sites include bony prominences such as the forehead, nose, malar region, knuckles, knees and ankles. The eruption often shows a tendency to symmetry, though in rare instances it may involve only one side of the body (*hemipinta*). Blue patches may also affect the mucous membranes of the mouth. Eventually the blue color tends to disappear and may be followed at first by partially depigmented areas and later by completely depigmented ones simulating ordinary vitiligo.

Red *pinta* is the somewhat misleading term used for a rare type of eruption. It consists simply of a generalized, mild flushing of the skin similar to the appearance of a person after taking a hot bath. This type is associated with the ordinary blue pigmentation and depigmentation.

As *pinta* affects the dark races almost exclusively (Indians, Negroes and those of mixed blood), it is obvious that the vitiligo-like areas may be extremely disfiguring. This usually constitutes the only ill effect of the disease, as it apparently does not cause subjective symptoms and does not affect the general health.

There is no known vector of *pinta*, and it is most probable that the disease is transferred from one person to another by contact.

The course of the disease when untreated is extremely chronic, lasting often for decades. The early lesions

respond well to antisyphilitic treatment and the same is true of the blue areas in the late (dyschromic) stage. However, when the stage of complete depigmentation (vitiligo) is reached the change in the skin is permanent. *Pinta* leaves no sequelae except permanent depigmentation in untreated cases. It is not a serious disease except for the cosmetic defect, which at times is most disfiguring.

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TROPICAL LYMPHANGITIS AND ABSCESES

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BROOKLYN

During the period 1926-1928 I conducted an investigation in British Guiana, under theegis of the Tropical Diseases Committee of the Royal Society of London and the London School of Hygiene and Tropical Medicine, into the bacterial complications of filariasis. Studies were made of the frequency and sites of occurrence, distribution by age, race and sex, clinical manifestations and bacteriology of all cases of lymphangitis, abscess and elephantiasis admitted to the inpatient and outpatient departments of the Public Hospital, Georgetown, between June 1927 and September 1928, of the serologic relationship between strains of the beta hemolytic streptococcus isolated from cases of lymphangitis with abscess in British Guiana and the commonest strain of the same organism isolated from the throat in cases of scarlet fever in New York City, of the relationship between the cutaneous response to inoculations of toxin prepared from the British Guiana and New York streptococcus strains and the presence of *Microfilaria bancrofti* in the peripheral blood, of the relationship between the nature of the organism found in abscesses and the presence of *Microfilaria bancrofti* in the peripheral blood of the same individual, and of the relative distribution of *Microfilaria bancrofti* among the different races and age groups of Georgetown. The choice of British Guiana for the work was a fortunate one in that the population is chiefly composed of three races, among whom it has long been known that the manifestations of filariasis differ considerably in degree and in frequency of occurrence. The racial groups include East Indians, Negroes and Portuguese and Mixed, the latter term denoting individuals having both Negro and Portuguese blood. The results of the investigation were published as No. 3 of the Memoir Series of the London School of Hygiene and Tropical Medicine.¹ As the memoir is the only report yet published in which an attempt has been made to clarify the relation between the clinical entities of lymphangitis, abscess and elephantiasis on the one hand and the disease agents *Wuchereria bancrofti* and the beta hemolytic streptococcus on the other, much of the data of the present paper have necessarily been derived from it.

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¹ Grace, A. W., and Grace, F. B. Researches in British Guiana, 1926-1928, on the Bacterial Complications of Filariasis and the Endemic Nephritis. No. 3 of the Memoir Series of the London School of Hygiene and Tropical Medicine, London, 1931.

TROPICAL LYMPHANGITIS

The geographic distribution of tropical lymphangitis has not yet been accurately determined. In view of its undoubted close association with *Wuchereria bancrofti*, its presence should be suspected in areas where the parasite is endemic, namely in almost every tropical and subtropical country. The term "tropical lymphangitis" is restricted in this paper, and should always be restricted, to those cases which arise without any detectable break in the skin of the segment of the body of which the lymphangitic area forms a part. Such lymphangitis is rare in temperate latitudes in which the inflammatory condition is almost invariably the sequel of trauma or, much less frequently, of dermatophytosis. The precipitating causes of tropical lymphangitis (hereafter referred to as lymphangitis), as construed by its sufferers, are manifold and include a sprain, a wrench or getting the feet unusually wet or cold, the great majority of attacks, however, arise without any apparent cause. Lymphangitis is generally of sudden onset and affects the lower limb in about four fifths of all attacks, the other structures affected, in descending order of frequency, are the upper limbs, the breast and the scrotum. The distribution of attacks in the lower limbs is along the line of the great and small saphenous veins, where three areas are particularly involved, namely the middle of the inner part of the thigh, the upper inner portion of the leg and, least frequently, the middle of the calf. In the upper limbs the disease is usually found along the inner aspect, the upper portion of the upper arm being rather more frequently attacked than the corresponding site of the forearm. In the breast and scrotum the upper outer quadrant and the most dependent part respectively, are the common sites of involvement. Lymphangitis is very largely a disease of young people. First attacks occur in almost 80 per cent of cases before the age of 30 and most frequently in the age group 10 to 19. If one also includes recurrences, only about 60 per cent of cases are found under the age of 30 years and the maximum number of attacks appear in the 20-29 age group. Both extremes of life may be attacked, the youngest patient was 18 months old and the oldest 74 years. There is sometimes a striking difference in the relative frequency with which lymphangitis occurs among different races living under approximately the same conditions, this applies particularly to the Portuguese and Mixed on the one hand, who suffer heavily, and the East Indians on the other, in whom the disease is uncommon. Women are more frequently affected than men in the ratio of about 3 to 2.

The attack of lymphangitis is invariably of sudden onset and is ushered in with severe, deep-seated pain localized to a small area. In the recurrences, which are common, the pain usually begins in the same site as that originally affected. Within a few hours erythema has developed over the painful area and, together with the pain begins to spread the latter throughout the whole of the segment of limb or organ involved and the erythema in streaks along the lymphatics toward the adjacent nodes. The temperature now begins to rise, reaching a peak of 102-103 F. in about six hours by which time the attack is at its height and the patient is prostrated. At this point the affected area is intensely painful, erythematous, tense and edematous, and lymphangitis is well defined. The satellite nodes are enlarged and tender but there is little erythema of the overlying

skin. At the end of twenty-four hours the temperature begins to fall, the signs and symptoms to abate and within the next two days the acute attack has passed off. Pain, however, remains in the part for another three or four days, after which the latter presents the same appearance as it did before the attack. It is impossible to predict when lymphangitis will recur, for there is no time relation between successive attacks. The period of remission may be measured in days, weeks, months or years or there may be only one attack in all. The description just given fits the common type of attack. Milder cases are found in which the involved area is no larger than the palm of the hand and the patient is so little inconvenienced that he can carry on his regular work, in others, however, the entire trunk and limbs may be intensely painful and erythematous and the constitutional symptoms of such severity as to endanger the life of the patient. Such severe attacks may last as long as seven or eight weeks. Lymphangitis is not associated either with desquamation of the skin, or vesicle or bulla formation, or with softening and fluctuation of the satellite nodes. In about 10 per cent of cases of lymphangitis, nodules appear in the center of the involved area. They are very hard, exquisitely tender, freely movable on the deeper tissues, and measure approximately 2 by 2 by 0.5 cm. They are attached to the overlying skin, which is erythematous and edematous but not elevated, and are wholly within the subcutaneous tissue. Over four fifths of the nodules subside without softening and disappear completely within a week, the remainder develop into an abscess which contains the beta hemolytic streptococcus in pure culture. In about 20 per cent of hospitalized cases of lymphangitis an abscess appears in the affected area. It requires about eleven days, with limits of three and twenty-one days, after the onset of an attack for such an abscess to be ready for evacuation, by that time the acuteness of the attack has subsided considerably. The exact proportion of persons who develop abscess in association with lymphangitis is not known, as the milder cases, which constitute the majority, not only are not seen in the hospital but are often successfully treated with home remedies.

Attacks of lymphangitis in limbs and organs which are elephantoid closely resemble in most aspects those in nonelephantoid tissues. There are, however, three differences. First, the elephantoid structure reacts as a whole with pain, erythema and edema, the localized areas of involvement so common in nonelephantoid tissues do not occur. Second the hard subcutaneous nodules are found only about one fourth as frequently in lymphangitic attacks in elephantoid as in nonelephantoid tissue. Third, the elephantoid limb is slightly more prone to the development of abscesses following an attack of lymphangitis than is its nonelephantoid counterpart.

Lymphangitis is one, but in British Guiana the least common of the predisposing causes of elephantiasis, which most frequently arises about two years after the appearance of an abscess in the part which subsequently becomes elephantoid. There is indirect evidence to show that such abscesses are due to the beta hemolytic streptococcus, which is also by far the commonest organism producing infections of elephantoid structures outnumbering its nearest rival the hemolytic staphylococcus by 4 to 1.

ORGANISMS ASSOCIATED WITH LYMPHANGITIS IN ELEPHANTOID AND NONELEPHANTOID TISSUE

Material for this study is best obtained during an attack of lymphangitis by culture of blood, of material aspirated from nodes and subcutaneous tissues and of pus from abscesses. I found positive blood cultures in approximately 10 per cent, and Rose² found positive node punctures in almost 90 per cent of persons hospitalized with acute lymphangitis. The sole organism found in the cultures was the beta hemolytic streptococcus which was also present in pure culture in 25 of 27 abscesses which followed acute lymphangitis. There are no statistics on the frequency of recovery of bacteria by aspiration of inflamed subcutaneous tissues.

The close association of the beta hemolytic streptococcus and lymphangitis and the rarity of such lesions in temperate climates raises the question of the existence of a type of the organism peculiar to lymphangitis or to British Guiana. An answer to this query was sought by studying the fermentation reactions, morphology, serologic reactions, virulence and skin reaction to toxins of the British Guiana beta hemolytic streptococci in comparison with those of beta hemolytic streptococcus strains commonly found in New York. The results of the study were as follows:

Fermentation Reactions—Of 68 British Guiana strains, 61 fell into the pyogenes, 5 into the subacidus and one each into the anginosus and equi groups.

Morphology—Sixty-one British Guiana strains, when streaked on 5 per cent horse blood veal agar and examined microscopically, fell into three morphologic types, I, IIa and IIb which could be readily identified by tint, periphery and granularity of the colony. Type I constituted 14.8 per cent and was light in color, had a noncrenated periphery and was free, or almost free, from granularity. Seventy-two and one-tenth per cent fell into type IIa and were dark with a finely crenated periphery and well defined granularity. Thirteen and one-tenth per cent belonged to type IIb and were much darker and much more coarsely granular than those of type IIa, the periphery was only roughly circular owing to the coarseness of the crenations. All of the type IIb strains belonged to the subacidus group. No mucoid strains were observed.

Serologic Relations—The criterion of identity of strains was reciprocal absorption of agglutinins. A stable homogeneous suspension of organisms for agglutination tests was made by repeated subcultures in phosphate glucose broth. Six British Guiana pyogenes strains isolated from abscesses in as many individuals during an attack of lymphangitis were studied serologically. Only one dissociated into fine and coarse variants during subculture, it is the fine variant which is considered here. Five of the six strains were identical but there was no reciprocal absorption between them and a common scarlet fever strain from New York. Eight British Guiana subacidus strains, all belonging to type IIb, were serologically identical with one another and different from subacidus strains obtained from London and New York.

Virulence—There was practically no increase in the virulence, originally low, of strains of type I and type IIa after passage through mice. The virulence of the very coarse type IIb strain was so low that 1.0 cc. of a twenty-four hour broth culture failed to kill mice.

Skin Reaction to Toxins—Toxin prepared from three British Guiana strains was employed in almost three hundred tests in conjunction with that derived from a scarlet fever strain, there was a high degree of correlation between the results obtained with all the strains.

Neutralization of Toxin by Antiserum—Toxin prepared from a British Guiana strain associated with lymphangitis was not neutralized by antistreptococcus serum derived from a scarlet fever strain. No toxin demonstrable by intradermal tests on Dick positive children was produced by the very coarse type IIb strains.

It would appear, then, that the hemolytic streptococcus of British Guiana has the following chief characteristics. The texture of the colony is principally granular, a common agglutinogen was found among a number of strains obtained from cases of lymphangitis, there was absence of serologic relation with a common scarlet fever strain, a serologically unique subacidus group exists, virulence for mice is low, there is no production of toxin by strains of very coarse colony texture, toxin produced by nongranular strains is not neutralized by antiserum derived from scarlet fever streptococci, approximately 90 per cent fall into the pyogenes group, and a toxin similar in its intradermal effect to that derived from a common scarlet fever strain is produced. It is evident, then, that there is some degree of difference between the beta hemolytic streptococcus of British Guiana and that of temperate climates.

ABSCESSSES

The frequency and site of occurrence of abscesses varies considerably in different tropical countries. Thus the annual incidence of abscesses per unit of population is over eight times, and the proportion of lower limb abscesses over four times, as high in British Guiana as in Jamaica.³ It is most likely that this difference is related to the less common use of footwear and the lower standard of living in British Guiana, where approximately 350 abscesses are opened annually in the Public Hospital in Georgetown, a city of 53,000 inhabitants. In over three fourths of the cases there is no visible lesion to account for the development of the abscess. Staphylococci are responsible for 53 per cent and the beta hemolytic streptococcus for 33 per cent, and about 12 per cent are bacteriologically sterile. These ratios apply not only to the population of the colony as a whole but also, with only slight divergence, to each of the three races in British Guiana, namely the Negro, the East Indian and the Portuguese and Mixed. Infections occur in the lower limbs twice as frequently as in the upper limbs and four times as often as in the chest wall and abdominal wall. While all ages are subject to the development of abscesses, the maximum incidence is found in the third decade. The proportion of infections due to the staphylococcus is highest in the first decade and declines with increasing years, whereas the reverse is true for the streptococcus. Males are affected more frequently than females in the ratio of five to three. As has been pointed out, the staphylococcus is most rarely responsible for attacks of lymphangitis. Not all infections with the beta hemolytic streptococcus, however, in endemic filarial countries are associated with lymphangitis—in fact, only about one fifth are so associated. It is impossible, therefore, to predict the nature

³ Grace A. W., Grace F. B., and Warren, S. The Parallel Incidence of *Filaria Bancrofti* and the Beta Hemolytic Streptococcus in Certain Tropical Countries, *Am. J. Trop. Med.* 12: 493 (Nov.) 1932.

² Rose, F. G., quoted in reference 1.

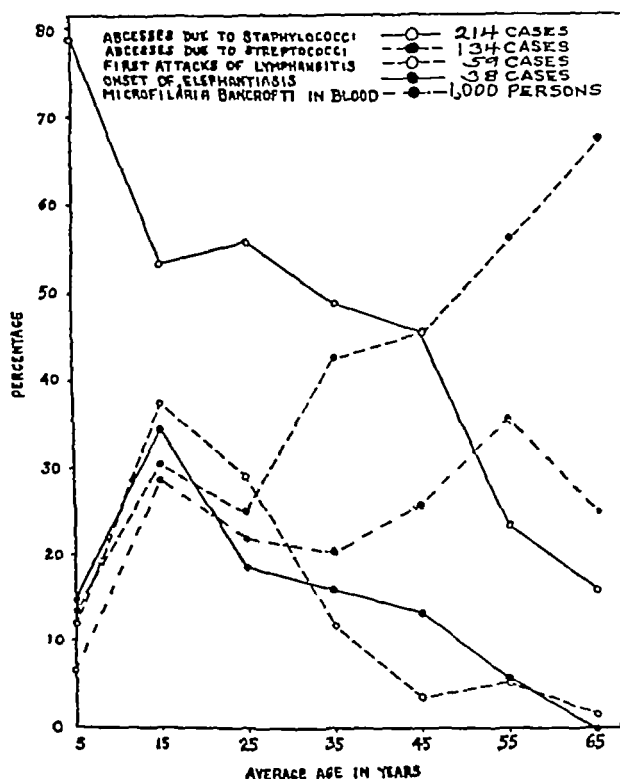
of the organism in an abscess unassociated with lymphangitis, a rough guide is sometimes obtained from its location the staphylococcus being predominant in infections above the shoulder and the streptococcus in the scrotum. Abscesses occur in the subcutaneous tissues and in the muscles, both superficial as in the recti abdominis and deep as in the inner aspect of the quadriceps femoris. An intramuscular abscess may contain either the staphylococcus or the streptococcus. The staphylococcus has a tendency to produce multiple abscesses often at widely separated sites which are prone to recur. Specimens of pus from staphylococcal and streptococcal abscesses are, in most instances, identical in appearance. Deep long standing, intramuscular streptococcal abscesses, however, contain pus which is characteristic in that it is very fluid and of a dirty brown tint, probably from altered blood. Such abscesses are usually the result of an attack of lymphangitis, occurring three weeks to a month previously in an elephantoid leg. The patient is often unaware of the existence of the abscess, which may contain as much as a pint of pus.

THE RELATION OF WUCHERERIA BANCROFTI TO LYMPHANGITIS

It was concluded in the Memoir¹ that "it is possible that lymphangitis and elephantiasis do not occur in a race or age group or country to any extent in the absence of *Filaria bancrofti*, and that the exciting cause of practically all the attacks is the beta hemolytic streptococcus, which may itself be of a particular type." It will be noted from the chart not only that the incidence of beta hemolytic streptococcus abscesses, the percentage of individuals showing *Microfilaria bancrofti* in the blood and the incidence of lymphangitis and elephantiasis are all low in the first decade of life but also that they all rise rapidly in the next decade. It is impossible to avoid the conclusion that there is a relation between these entities.

Sufficient evidence has been advanced in this paper to show the connection between lymphangitis and the beta hemolytic streptococcus. What part does *Wuchereria bancrofti* play in the picture? It seems certain that it does not of itself produce lymphangitis.⁴ Any theory of the causation of lymphangitis, however, which omits the worm as a factor must perforce, ascribe the condition to the beta hemolytic streptococcus alone. As that organism is widely distributed in temperate climates, where tropical lymphangitis is a rarity, it would be necessary to prove, in support of this theory, that the beta hemolytic streptococcus of lymphangitis is of a vastly different character from that of temperate climates. The differences between the organisms from tropical and temperate latitudes have already been stated and are, in my opinion, insufficient to warrant the designation of the beta hemolytic streptococcus as the sole factor in the production of lymphangitis. I believe that the sequence of events leading to an attack of lymphangitis is as follows. There is some degree of obstruction to the flow of lymph owing to the presence of the adult worm in the lymph nodes and channels. The existence of lymph stasis renders the tissues more susceptible to infection by the beta hemolytic streptococcus. Once infection has occurred the tissues of the affected

area become hypersensitive to the beta hemolytic streptococcus and its products and attacks of lymphangitis may be occasioned by organismal or toxic stimuli of intensity too low to be appreciated by tissues previously uninvolved. Evidence in support of this hypothesis is twofold and indirect. First Drinker⁵ has shown that the lymphedematous leg of a dog is not only susceptible to spontaneous infection with hemolytic streptococci but could be infected very readily by injection of hemolytic streptococci. Second, the East Indian has the lowest microfilarial rate and also the lowest incidence of lymphangitis and elephantiasis of the three chief races in British Guiana, that the infrequent occurrence of these clinical entities is not due to a relative insusceptibility to the beta hemolytic streptococcus is shown by the fact that streptococcal abscesses occur just as commonly in the East Indian as in the Negro and in the Portuguese and Mixed.



Incidence at different ages of abscesses due to staphylococci abscesses due to beta hemolytic streptococci first attacks of lymphangitis onset of elephantiasis and *Microfilaria bancrofti* in blood

By what means does the presence of *Wuchereria bancrofti* render the tissues more susceptible to infection with the beta hemolytic streptococcus? An unsuccessful attempt was made to answer this question by subjecting 52 individuals, whose night blood had previously been examined, to skin tests with scarlet fever and British Guiana streptococcus strains, and also by studying the night blood of 300 persons with abscesses, the bacterial nature of each of which was known. No relation was found between the presence of microfilaria in the blood and either a positive reaction to streptococcus toxin or the existence of the staphylococcus or streptococcus in abscesses.

⁴ Croll quoted in reference 1

⁵ Drinker, C. K. and Loeffler, J. H. *Lymphatics Lymph and Lymphoid Tissue*. Cambridge: Harvard University Press, 1941.

TREATMENT AND PROPHYLAXIS

Prior to the introduction of the sulfonamide drugs, treatment of lymphangitis consisted in rest, local application of heat and acetylsalicylic acid. Vaccines prepared from local strains of the beta hemolytic streptococcus were felt to be of value in reducing the frequency of recurrences. At present the most efficacious remedy is either sulfathiazole or sulfadiazine in doses of 1.5 Gm. three times daily for one week. Abscesses should be incised and drained. No means exist for destroying or removing the adult worms or microfilariae. As *Wuchereria bancrofti* is transmitted by the bite of the female *Culex fatigans*, antimosquito measures will help to reduce the incidence of the disease.

LEPROSY

EPIDEMIOLOGY AND NATURAL HISTORY

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It may be said without risk of serious contradiction that less is known of the essential factors in the pathogenesis and transmission of leprosy than of the other great infectious diseases of mankind. This defect in our knowledge stands out more prominently when one remembers that leprosy has held the attention of countless persons over centuries of time and has been recognized by layman and physician alike as one of the major scourges of the human race. It is a noteworthy historical fact, in this connection, that leprosy was among the first, if not the first, disease the cause of which was ascribed to a bacterial organism. Hansen first reported the finding of a bacillus as the possible causative agent of leprosy in 1874. It was not until 1882 that Koch announced the identity of the bacillus of tuberculosis.

The faltering progress of our knowledge is to be attributed in part at least to the remoteness of the great endemic foci of leprosy from the centers of scientific investigation and to the barriers raised against its study by the unique emotional qualities which have characterized the attitude of man toward those afflicted with the disease. Persecution and social ostracization have been the fate of the leprous person. The almshouse and the asylum have been his refuge rather than the hospital from which he could look forward to rehabilitation through an objective approach to the solution of his problems. Even today there are rumors of the massacre of its victims.

But, in spite of these accidents of geography and human behavior, many serious attempts have been made to understand the nature of the infection. Most of these, however, have ended in failure. There is yet no certainty that the Hansen bacillus has ever been cultivated on artificial mediums nor has the disease in progressive form been established in laboratory animals. Direct transmission to human subjects by inoculation of infectious material has also failed. Without these achievements, scientific inquiry is handicapped and the position of *Mycobacterium leprae* as the cause of the disease remains unsettled.

Furthermore, there is a lack of understanding of the natural history of leprosy, without which there can be no sound judgment of the effects of therapeutic measures. Interpretation of the manifestations of infection is confused and complicated too frequently by our engrossment in the naming of the types of disease and the forms of lesion, a practice which too often tends to obscure rather than enlighten our understanding. An almost total absence of any accurate quantitative knowledge of the incidence of infection, and of the rate at which it attacks various groups in the population, prevents a scientific evaluation of the effects of regulatory control.

But, regardless of the many shortcomings in our knowledge and the absence of a rational plan of prevention, leprosy has been on the decline as an important force of morbidity in Europe and the British Isles since the thirteenth century, when it reached its zenith in that part of the world.¹ In Asia it would seem that the rate of infection now remains stationary, but this is only an impression.

It has been predicted that the disease will disappear through the application of sound principles of public health technic. This undoubtedly oversimplifies the explanation of the gradual decline of the infection. But, as Muir² has stated, "Whatever the actual causes which control the spread of leprosy, it seems clear that it belongs to a certain stage of human social development." It is not found among nomadic and aboriginal peoples until they forsake their tribal customs and merge with and adopt the life and practices of more civilized people. But as their state of civilization advances with its attending improvements in personal hygiene, nutrition and sanitation the decline of the disease becomes apparent.

Leprosy, then, may be taken as a good example of the effect of social and economic forces in the production of disease. This aspect of the problem requires more careful consideration in the epidemiologic study of the infection. To give it such might aid in shedding light on the reasons for the localization of the disease in certain communities and assist in explaining on grounds other than heredity the apparently higher rate of attack among certain racial elements, frequently foreign born. As another has written, leprosy is a "disease of the crowded house, room and bed." It may well be that the observations of Jonathan Hutchinson,³ who attributed the disease to the consumption of tainted fish, have in them the essence of truth. It is not so much the eating of spoiled fish but the necessity of so doing that should claim our attention.

LEPROSY IN THE UNITED STATES

Today leprosy as a serious problem of public health is limited chiefly to the tropics and subtropics. The great foci of disease are in central Africa, in India and in parts of China, with smaller endemic areas in Central and South America and in Mexico. As a problem in this country leprosy is only of minor significance. There are but few endemic centers in which it seems the infection can be transmitted. These are confined to three of the states bordering the Gulf of Mexico, namely Louisiana, Texas and Florida. Other localities such as

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1 Newman George. On the History of the Decline and Final Extinction of Leprosy as an Endemic Disease in the British Islands, London, The New Sydenham Society, 1895.

2 Muir, Ernest. The Epidemiology and Control of Leprosy. Tr. Roy. Soc. Trop. Med. & Hyg. 31: 377, 1938.

3 Hutchinson Jonathan. On Leprosy and Fish Eating. A Statement of Facts and Explanations. London: Archibald Constable & Co. Ltd., 1906.

New York City, in which the leprosy are always to be found, are not areas of infectivity. "With a single exception," in the words of McCoy,⁴ of the Public Health Service, "I have been unable to find any record that any one has ever been infected with leprosy in New York City, although in the aggregate over a period of a few decades literally hundreds of lepers have been domiciled there for varying periods of time."

The oldest focus of infectivity in leprosy is in Galveston. This was made the subject of an epidemiologic report by Boyd and Fox⁵ in 1920. No important conclusions were drawn from this investigation, but it is of interest to note, in view of the attempts to relate the human infection to the murine type of leprosy, that from an examination of some 23,000 rats for the plague in this locality only 7 leprosy rats were identified by the detection of acid fast bacilli in smears from their tissues.

MURINE LEPROSY

In 1903 Stefansky,⁶ working in Odessa, observed a leprosy-like disease in rats. Almost at the same time, and independently, Dean⁷ in England described the same disease. In certain anatomic manifestations, and in the presence of acid fast bacteria, the disease of the rat resembles human leprosy. The organism of murine leprosy, *Mycobacterium leprae murium*, has been regarded by some⁸ as perhaps identical with the organism of human leprosy, *Mycobacterium leprae*. But there is no convincing evidence to support this assumption. It may possibly be, however, that studies of this organism in the future will shed light on the relationship of the acid fast mycobacterium to human leprosy and help elucidate some of the problems related to the disease.

In this connection I wish to refer to a study of the epidemiology of leprosy in Australia by Cook,⁹ who reported that the disease showed a distribution like that of the rat flea *Xenopsylla cheopis*. He raised the question of an insect vector with the rat serving as the reservoir of infection, the assumption being that the organisms of murine and human leprosy were identical.

TRANSMISSION OF INFECTION

The communicability of leprosy has been acknowledged since Biblical times. However, this view was discredited temporarily by Danielssen and Boeck when they introduced the concept of hereditary transmission. In Norway the focus of the disease failed to disappear, as had similar foci in other parts of Europe. These observers saw that the disease tended to be confined to certain families. Their remarkable publication on leprosy, "Om Spedalskhed," remains one of the classic landmarks in the history of the disease.¹⁰ The part hereditary influences may have in affecting the susceptibility of the individual to leprosy still holds the attention of some investigators.¹¹

⁴ McCoy George W. Discussion. Leprosy in the United States in Moulton, F. R. Tuberculosis and Leprosy: the Mycobacterial Diseases. Lancaster Pa. Amer. Assoc. for Advanc. of Sc. 1938 p 110.

⁵ Boyd M. F. and Fox W. F. An Epidemiological Study of an Endemic Focus of Leprosy. Public Health Reports 35: 3007 (Dec. 17) 1920.

⁶ Stefansky W. K. Eine lepraähnliche Erkrankung der Haut und der Lymphdrüsen bei Wanderratten. Centralbl. f. Bakt. Orig. 33: 481 1903.

⁷ Dean George. A Disease of the Rat Caused by an Acid Fast Bacillus. Centralbl. f. Bakt. Orig. 31: 222 1903.

⁸ Walker E. L. and Sweeney Marion A. The Identity of Human Leprosy and Rat Leprosy. J. Prev. Med. 3: 325 1929.

⁹ Cook Cecil. The Epidemiology of Leprosy in Australia. Canberra Australia Dept. of Health Pub. No. 38 1927.

¹⁰ Danielssen D. C. and Boeck W. Om Spedalskhed. Christiania 1847.

¹¹ Aycock W. Lloyd and Hawkins J. W. Regional Racial and Familial Relationships in Leprosy in the United States. Public Health Reports 56: 1324 (June 27) 1941.

I mention this departure from the accepted theory of transmission to direct attention to the familial nature of the disease and the problem of household contact. I have already referred to the need of quantitative data on the rate of transmission of infection as a necessary prelude to the scientific study of the results of control and call attention here to the important work of Doull,¹² who studied the attack rates of leprosy within the family group. This he did in retrospect, using material from the Philippine Islands, by applying the principles of the life table to the measurement of the risk of attack.

HOUSEHOLD ATTACK RATES

For all ages, Doull found the annual risk of contracting leprosy was about five times as high among those having household exposure as among the group who were not subjected to this risk. The attack rates for those exposed were better demonstrated by cumulating the rates to the age of 20 years. Assuming that there was no selective mortality among the leprosy, it was found that 170 per thousand of family contacts could be expected to show evidence of the disease. For those not in household risk, the comparable figure was 30 per thousand.

Evidence showing the higher susceptibility of those in early life was also obtained from this study. The ratio of the attack rate for the age group 10 to 14 years to the rate for the group 20 to 29 years was 5.1 to 1 and, for the nonexposed, 2.8 to 1.

The results of Doull's analysis support the commonly accepted view of the infectivity of the disease on close and prolonged contact. Further application of the same statistical technique to the measurement of infectivity under varying circumstances is desirable.

DISTRIBUTION OF LEPROSY IN CHINA

The wide distribution of leprosy throughout the world has raised questions as to the geographic influences on the transmission of infection. Rogers,¹³ from a study of the disease, especially in India, reached the conclusion that the only factor of this nature common to the scattered endemic foci was a state of high atmospheric humidity.

The vagaries of the geographic distribution of leprosy are well illustrated by a study of the location of endemic areas in China. Over a period of twenty years, while a member of the staff of the Peiping Union Medical College, I was interested in this aspect of the disease. Unfortunately the data on the subject are now beyond my reach, but it may be stated that during all that time, with a single exception, no case of leprosy was observed which had been contracted definitely in Hopei province, of which Peiping is the capital. The only patient who had resided continuously in Hopei came from a small village in the southern part of the province near the Shantung border. In Shantung there is a large endemic focus of leprosy.

While the number of leprosy patients seen annually in the hospital in Peiping was not large, it must have been true that the city had harbored the disease for many years, perhaps centuries, a time sufficient to have allowed the establishment of an endemic focus had the environmental conditions been congenial to the transmission of the disease.

¹² Doull James A. The Importance of Field Studies of Leprosy with Especial Reference to the Risk of Household Exposure. Am. J. Hyg. 29: 27 1939.

¹³ Rogers Leonard. The Croonian Lectures on Leprosy. Researches I. The Epidemiology of Leprosy. Ann. Trop. Med. 18: 267 1924.

Peiping lies in the great North China plain. For the greater part of the year, except in early and middle summer when the rains come, the climate is very dry and the skies are cloudless. The winters are cold and the summers hot. The city is situated approximately at 40 degrees north latitude. Following this parallel to the west there is apparently no leprosy in the adjacent province of Shansi, but proceeding to the extreme western part of the country toward the highlands in the province of Kansu the disease is endemic. There are large areas of infectivity in the Yangtze valley, especially in the region of the city of Hankow and in the southern province of Kwangtung.

Before the onset of hostilities in 1937, and prior to the subsequent migration of great masses of the population, there existed in China favorable conditions for the epidemiologic study of leprosy. The unique place of the family in the social organization with the close association of its members, including not infrequently two and three generations under the same roof, the widely scattered endemic areas embracing extremes of climate and topography and the accompanying ethnologic and demographic variations in China's population offer rich opportunities for investigation. As it is, the only record of the pattern of distribution in the country is a general survey made through the medium of questionnaires by Fowler,¹⁴ which should be read by those interested in the subject.

NATURAL HISTORY OF LEPROSY

There is little need at this time to enter into a description of the clinical phenomena of leprosy. However, it is pertinent to the discussion to emphasize the need for a clearer and fuller understanding of the natural history of the disease. Too frequently we are influenced by the formalized and static picture given in the books. Leprosy is a disease of great chronicity and as such it is subject to a wide variety of changing clinical sequences. To divide the disease into carefully defined categories, as for example nodular and anesthetic, is to miss the point of its evolution.

For the most part, if one will only observe the patient long enough and carefully enough there will be found periods of acute reaction alternating with periods when the infection is quiescent. The change in tempo is sometimes critical and profound. Periods of inactivity may persist for months or even years, when some force, usually not identifiable, appears to precipitate a relapse and further the progress of the disease.

Relapses are characterized by signs of acute reaction. There is evidence of redissemination of the infective agent. The cutaneous lesions may be exanthematous in form and distribution. Some may remain after the eruption as a whole has subsided to establish new foci of chronic inflammation. Areas of anesthesia may increase in size, and new disturbances in sensibility are usually to be detected at the site of fresh inflammatory lesions. The phenomenon of dissociation of the elements of sensation under such circumstances is noteworthy. The sense of temperature is lost first, followed as a rule by the loss, in succession, of the perception of pain and touch. Last of all, and rarely, is the loss of the sense of pressure. Nerve trunks may thicken and lymph nodes enlarge. Areas of skin, sometimes involving the entire face or a buttock, may acquire a swollen erysipelatos appearance.

ERUPTIVE LESIONS

As in syphilis, a great variety of eruptive lesions, both acute and chronic may be found. The individual pattern of their form and distribution may vary considerably from patient to patient. This depends, no doubt, on the allergic capacity of the skin under varying circumstances. Chronic granulomatous lesions, not unlike those of tuberculosis in plaques and configurations, may develop.¹⁵ In these the histologic picture is that of typical tubercle formation. In fact the most typical tubercles of the skin are found not in tuberculosis but in leprosy.

Acid fast bacilli may, or may not, be found in the granulomatous lesions. Their absence in such cases need not cause surprise. Failure to find them by staining methods does not mean their absence in the tissue. In tuberculosis of the skin one almost never is able to demonstrate in fixed tissue specimens by staining methods the presence of acid fast bacilli. But almost always in such cases tuberculosis can be produced in susceptible animals by inoculation with portions of the material found to be free of organisms by microscopic examination.

The ease with which acid fast organisms can be demonstrated depends on the stage of inflammation when the search is made and on the method of examination. Fixed tissue preparations of skin and lymph node are best for this purpose.¹⁶ Very early and late in the course of the dermatitis the organisms are difficult, if not impossible, to find. In the latent case careful searching of many sections may not reveal a single acid fast form. Yet in a month's time they may be found in profusion should the patient develop an acute relapse.

TREATMENT

The value of the derivatives of hydnocarpus oil in the treatment of leprosy is difficult to define. Failure to take into account the rhythmic course of the infection, with its periods of alternating activity and latency, has led not infrequently to erroneous judgment of the efficacy of the drugs. From the experience in Peiping I am left wholly unconvinced that they serve any useful purpose. At times, when during the course of their administration acute relapse ensued, it was only reasonable to suspect that the hydnocarpates were in some way responsible. These reactions would occur occasionally even when small and carefully regulated doses of the drug were given. Whether because of the drug, I do not know.

For the present, it seems to me, a regulated way of living, with rest and nutritious food, and protection from injury, outside an endemic focus of infectivity, offers the patient the best chance of recovery.

No inflexible regulations for the quarantine of persons afflicted with leprosy need be set. In those places where the disease shows itself to be endemically infective, segregation may be practiced if it does not punish the patient. To punish him is to defeat in the end the purpose of quarantine. The leprosy person does not as a rule require asylum nor an almshouse, he does need hospitalization with the purpose always in mind of returning him to a life of usefulness and of self respect.

¹⁵ Wade, H. W. Tuberculoid Changes in Leprosy. *Pathology of Tuberculoid Leprosy in South Africa*, Internat J Leprosy 2: 7, 1934.
¹⁶ Hu, C. K., and Ma, J. W. Demonstration of Bacillus Leprae by Means of Cantharides Plaster and Carbon Dioxide Snow, Nat Med J of China 16: 177, 1930.

¹⁴ Fowler, Henry. A Survey of Leprosy in China, China Med J 39: 584, 1925.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. MCCARTHY, OBERMAYER, FOX,
GRACE AND FRAZIER

DR GEORGE M. LEWIS, New York. A year's experience examining men who have returned from the tropics has convinced McCarthy that the bulk of the superficial fungous infections to which the troops are subject are the same as seen in the United States, but in an exaggerated form. Secondary bacterial pyogenic superinfection is a more common complication than in civilian dermatologic practice in the United States. This may be due chiefly to factors inherent in a tropical climate and may be influenced by conditions of combat service. The tendency to latency and consequent neglect of *Trichophyton* *gypseum* infections and resistance to treatment of *Trichophyton* *purpureum* infections, both of which are of common occurrence in the United States, suggest that the infection may not always be newly acquired in the tropics. From what is known and from what McCarthy says, the treatment of all known fungous infections and the institution of prophylaxis is desirable. To be an effective prophylactic, a remedy may be easily usable, readily available, relatively nonirritating and yet mildly fungicidal. Talc reinforced by 0.5 per cent salicylic acid and the same concentration of thymol fulfils these conditions and also tends to counteract perspiration. When applied under and between the toes once or twice daily, the danger of acquiring a new infection is greatly lessened. The same remedy may be useful in treating mild fungous infections of the feet. All evidence points to the effect being due to a simple screening of the sun's rays by the lesions (Lewis G. M., and Hopper, Mary E. *Pseudoachromia* of *Tinea Versicolor*, *Arch Dermat & Syph* 34 850 [Nov.] 1936). When peeling of the skin occurs there is then manifest a contrast between the unchanged skin under the patch of *tinea versicolor* and the surrounding sun tanned skin. Treatment with 10 per cent solution of sodium thiosulfate continued for one to two weeks before exposure to the sun's rays will prevent the development of these apparently depigmented areas. Two statements of McCarthy regarding *T. purpureum* (*rubrum*) are at variance with my experience. If a suitable medium (using dextrose) is inoculated with *T. purpureum*, a red purple pigment is invariably produced in the substrate (Lewis, G. M. and Hopper, Mary E. *Pigment Production by Fungi* 1 *Nutritive Requirements*, *ibid* 44 453 [Sept.] 1941). Because of this constant and primary characteristic, the laboratory recognition of the fungus is facilitated. At least 5 instances of follicular infection to *T. purpureum* have been recorded. The fungus may be considered an ectothrix, *Trichophyton* and not an *Endodermophyton*, as McCarthy states.

DR LEE MCCARTHY, Washington, D. C. I wish to thank Dr. Lewis for his painstaking discussion of my portion of the symposium. I agree with him that the problem of the control of mycotic infections at the end of the war will have to be largely in the hands of the general medical practitioner and it is with this end in view that the present symposium was prepared.

COL J. E. ASH, M. C., U. S. Army. Little of the material and data that have come to the Army Medical Museum from our theaters of operation are as yet available for publication, but several years' experience in the tropics furnish some items that might be added to Dr. Obermayer's list. I should like to emphasize the possibilities that can arise from chigoe bites. Indolent, refractory ulcerations that may be 8 to 10 cm. in diameter, and at times gangrene, especially of the toes, may result. It is also necessary to stress the frequency and persistence of the nonspecific ulcers of the skin that may result from any insect bites and from scratching, as well as from incidental trivial trauma. These lesions are usually pyogenic, but they may be granulomatous. They are particularly common in children. A not too serious but very painful and fairly common lesion seen in some of our foreign possessions is produced by the larva of *Dermatobia cyaniventris*. A favorite site for the female of the species to lay her eggs is on the exposed shins, but the head and neck may be involved. It is a spectacular boil like lesion with a fairly large opening through which the larva protrudes and retracts its attenuated caudal end. The

larva is a flask shaped affair and cannot be extracted intact through the skin orifice. Surgical excision of the whole lesion is the treatment of preference. It is fairly common in Central and South America. Mention should also be made of *Larva migrans* (bot fly). Two of the Arachnidae might be added to the list: scorpion and tarantula. They give very painful bites which can lead to constitutional symptoms. The centipede—not the small soft thousand legger of the temperate zones but the formidable armored *Scolopendra* that may reach the length of 12 inches—can make a surprisingly large gash by a sweeping motion with its two vicious anterior claws. Serious local necrotic lesions and alarming general symptoms may result from the poison that he injects into the wound. Finally, the series of "stinging caterpillars" are something of a problem in Japan. There are several species: *Parasa hilarata*, *Miresa morata*, *Nygma* sp. and others. The slightest contact with these larvae causes extensive, intense irritation and there are severe constitutional symptoms that may last for several days. The reaction is much more severe than that from our own brown tail moth. The museum is indebted to Dr. R. G. Mills for the information and material on this subject that he deposited here some years ago.

DR M. E. OBERMAYER, Los Angeles. Creeping eruption (*Larva migrans*) should be included in a consideration of diseases of entomologic interest. However, since the disorder is more frequently caused by nematode larvae than by the migrant larvae of flies and since diseases caused by vermes do not form a part of this paper, creeping eruption was not included.

DR MORRIS MOORE, St. Louis. The importance of tropical diseases in our present crisis cannot be overemphasized in view of the various widespread theaters of war. Dr. Fox has thoroughly covered in a short space, the important features of yaws, cutaneous leishmaniasis and pinta. There remain, therefore, only incidental remarks which I would like to extract from my own acquaintance with these diseases and inject them into a discussion of the paper. Yaws, or frambesia, may be confused with several diseases. The frambesia form, usually considered to be the secondary stage, following the incubation period, may simulate a form of paracoccidioidal granuloma caused by *Paracoccidioides brasiliensis*. The type which localizes at the junction of the skin and mucous membranes and which resembles syphilitic condylomas may mimic the buccal mucosa type of paracoccidioidal granuloma caused by *Paracoccidioides cerebriformis*. Gangosa may be mistaken for tertiary syphilis. Mutilating leprosy must also be ruled out as well as American cutaneous leishmaniasis. Various workers have observed that the well advanced form of yaws closely resembles syphilis. However, as Stitt points out, in yaws the chief diagnostic point histologically is the pronounced involvement of the epidermis and slight change in the corium. Cutaneous leishmaniasis, an important tropical disease, may be transferred to the temperate zone. Dwork (K. G. *Arch Dermat & Syph* 45 676 [April] 1942) surveyed the literature of the United States and Canada and listed 24 cases in addition to 4 that he reported. All cases were of Near Eastern origin. The mucocutaneous type (American leishmaniasis), generally considered to be a New World disease, may occur in the Old World. Panja (G. J. *Indian M A* 7 2 [March] 1938) published the report of a case showing nodular lesions on the tongue. He also cites Napier and Das Gupta, who reported cases in which there were lesions on the mucous membranes of the hard palate, cheek and lips. In South America cutaneous leishmaniasis may easily be confused with paracoccidioidal granuloma both the cutaneous and the localized buccal mucosa type. Occasionally the two diseases may be found in the same patient and this presents a problem in diagnosis. In addition to the diseases mentioned by Dr. Fox, one should consider leprosy, rhinoscleroma and neoplasms. In examining sections of lesions, histoplasmosis should be considered. In both diseases there is a proliferation of endothelial phagocytes which engulf the parasites. Leishmania and Histoplasma bear a striking resemblance and may easily be confused. Mazza and the Bassos (Mision de Estudios de Patologia Regional Argentina, Univ. de Buenos Aires, 1942, Pub. No. 63) found in the first stage of Chagas disease parasites which were leishmaniform in appearance. Pinta mal de pinta or carate a New

World disease, has recently been brought up to date by Pardo-Castello and Ferrer (*Arch Dermat & Syph* 45 843 [May] 1942). The disease manifests itself first as a papule (initial lesion), which becomes an oval or rounded patch. Other papules or macules form and merge to go into a second or disseminate stage. The disseminate form shows large plaques, termed pintids by Leon y Blanco, which may be syphilitic, lichenoid, psoriasiform, trichophytoid or eczematoid in appearance. The lesions show pigmentary changes of pink, red, purple, slate color or brown. After a course of several months the disease progresses into the late chronic stage, presenting areas of hyperpigmentation and achromia. Finally there develop late dyschromic changes showing a clinical picture resembling vitiligo. Aortic and cerebrospinal changes have been noted. The spirochete of pinta can be demonstrated among the epidermal cells, especially in the stratum malpighii. Pinta is known to occur in Peru in endemic foci.

DR HOWARD FOX, New York. Dr Moore is correct in saying that yaws may be confused with a form of paracoccidoidal granuloma (South American blastomycosis). In this case help could be obtained by the serologic reaction, which in the early (secondary) stage of yaws gives close to 100 per cent positive reactions. Gangosa, as Dr Moore says, may be mistaken for tertiary syphilis. In my opinion gangosa is not a separate disease but merely a destructive sequel of another disease, which is usually yaws. It is possible, however, that the same destructive changes called gangosa may occasionally represent a terminal stage of syphilis. I agree entirely that the tertiary, destructive form of yaws "closely resembles yaws." In fact, it cannot be differentiated clinically. The purely cutaneous type of leishmaniasis (oriental sore) is a disease of the Old World. As far as I am aware, no autochthonous cases have appeared in the Western Hemisphere. The mucocutaneous type (American leishmaniasis) is confined almost entirely to the Americas, especially South America. It is true, as Dr Moore has said, that the mucocutaneous type may be confused with South American blastomycosis. If the differentiation cannot be made by finding the respective organisms or by intradermal test, the therapeutic test with antimony and potassium tartrate may settle the diagnosis, as blastomycosis is not affected by this drug. With regard to the color changes in the dyschromic stage of pinta, on rare occasions a pinkish color may be present. This does not merit the appellation of redness, as a bright red such as scarlet or crimson is never seen in this disease. The dyschromic or pigmentary stage may appear a few months after infection with pinta, but such changes are more apt to appear after many months or even years later. Dr Moore states that pinta is known to occur in Peru in endemic form. The disease is also endemic in many countries of Central and South America, as well as the West Indies.

DR GEORGE CHEEVER SHATTUCK, Boston. Dr Grace says that the term tropical lymphangitis should always be restricted to "cases which arise without any detectable break in the skin of the segment of the body of which the lymphangitic area forms a part." In this presentation of his observations on inflammatory processes in the tropics, Dr Grace has restricted his remarks to the category of cases thus defined. He says that cases belonging to this category are rare in temperate latitudes. I question whether in connection with lymphangitis associated with elephantiasis the differentiation of Dr Grace is useful. Is it a fact that lymphangitis in nontropical cases of elephantiasis can usually be traced to an infection which has gained access to the body by way of a locally related lesion? I do not know the answer. His observation that abscesses are more than four times as common in British Guiana, where bancroftian filariasis is very common, as in Jamaica, where it is infrequent, points to a relationship between abscess and the filaria. This view is strengthened by the fact that fragments of an adult *Filaria bancrofti* have been found in a few instances in abscesses by Manson-Bahr and others. Dr Grace's data suggest also that the beta-hemolytic streptococcus is of importance in the great majority of such abscesses. Perhaps the presence of the filaria in the tissues lowers local resistance to infection and prepares the way for the streptococcus. This was the opinion of John Anderson, who studied filariasis in British Guiana in 1921 (Filariasis in British Guiana. Clinical,

Pathological and Therapeutic Investigations, Research Memoir Series, London School of Tropical Medicine, vol 5, memoir 7). We do not know accurately the geographic distribution of lymphangitis in the tropics in general. Neither do we know much about the local incidence of lymphangitis in the wider sense or of abscess. Such information is needed before sweeping correlations and comparisons can be made. Another interesting fact emphasized by Dr Grace is that, of the three principal races in British Guiana, the East Indian has the lowest microfilarial rate and also the lowest incidence of lymphangitis and elephantiasis. That the East Indian is not less susceptible to infection with the beta-hemolytic streptococcus is shown by the fact that streptococcal abscesses are as common among them as among the Negroes, the Portuguese or the mixed elements of the population. Has the East Indian a high resistance to *Filaria bancrofti*?

DR ARTHUR W. GRACE, Brooklyn. The papers in the symposium have dealt with the common dermatologic entities of the tropics which are caused by fungi, protozoa, bacteria and tiny animal parasites. In our knowledge of these diseases there are wide gaps, some of which may well be bridged by the employment of the greater and better facilities for speedy aerial transport that peace will bring. These will enable specimens of pathologic tissue in fixative, virus containing material in refrigerant and chilled bacterial cultures from most parts of the tropics to be studied in the larger centers of medical research in the temperate zones within a short period of their collection. Not all of the advances in our knowledge of cutaneous diseases in the tropics are dependent on the study of morbid material in a distant laboratory. Much valuable information can be gained by careful clinical, climatologic and epidemiologic observation on the spot. An excellent example of this type of research is found in the reports of Loewenthal on the cutaneous diseases peculiar to, prevalent among or absent from native races in East Africa. It is not always easy, however, to translate data obtained by observation of one race to another, particularly when there is a lack of exact coincidence of the cutaneous histology in the two races. Such difficulty does not arise in Australia, where there is virtually no colored element at large and where comparison is possible between the inhabitants of a city in the tropics and one populated with the same stock in the temperate zone 2,000 miles to the south. Opportunity to study the course of tropical disease, free from local complicating factors, is now being afforded in the United States. An example of this kind is filariasis, in which inguinal adenopathy and scrotal and inguinal edema are not infrequently followed, in endemic filarial countries, by elephantiasis of the lower limbs or scrotum. The precipitating cause of the elephantiasis is generally believed to be the hemolytic streptococcus normally resident on the skin in such endemic areas. The higher degree of personal hygiene exercised by the inhabitants of the United States, the use of footwear and the probable lower streptococcus population of the skin in this country should therefore render much less likely the development of elephantiasis in persons who have left the endemic zone shortly after the acquisition of inguinal and scrotal manifestations of filariasis.

DR FRED WISE, New York. Dr Frazier's broad experience with leprosy over a period of many years is reflected in this contribution, dealing chiefly with the epidemiology and natural history of the disease. I shall limit my discussion to the occasional difficulty of diagnosing atypical and incipient cases and the phenomena relating to tuberculoid leprosy. Within the past three years 2 patients have come under my observation in whom the diagnosis of leprosy was entertained by myself as well as by a large group of my colleagues in New York. Both patients presented cutaneous lesions which were indistinguishable from those of leprosy. Bacteriologic, histologic and neurologic investigations, however, failed to confirm and, at the same time, failed to negate the diagnosis of leprosy. In cases in which laboratory investigations result in negative findings, the most careful neurologic examinations must be done in an attempt to discover evidences of loss of sensation to heat, existence of hyperesthesia, anesthesia, deep analgesia and other disturbances of the nervous system. It should be borne in mind that diverse nerve changes may be present for months or years before the telltale cutaneous lesions

manifest themselves. Thus, some cases require protracted observation and investigation before the correct diagnosis can be determined. Such instances are fortunately uncommon in this country. Dr. Frazier aptly said that "The most typical tubercles of the skin are encountered not in tuberculosis but in leprosy." If the diagnosis of certain forms of eruption should be based wholly on the histologic structure of a single lesion which happened to be of tuberculoid character, it can be readily seen that the unskilled physician's interpretation would lead to grave difficulties. Many years ago, Josef Jadassohn of Breslau established the fact that in certain cases macular lesions devoid of specific histologic structure would later undergo a transformation to a definite tuberculoid architecture. Comprehensive studies of this phenomenon have been published by Wade, Pineda, Srenz and Palomino in recent years. Wade demonstrated tuberculoid alterations also in nerves, testes and lymph nodes. Many lesions of this character, when they occur on the skin, cannot be distinguished from sarcoid, and, as in cutaneous tuberculids bacilli are either quite scarce, or none can be detected in the tissues. The immunobiologic phenomena pertaining to infection with *Mycobacterium leprae* are analogous to those of infection with tuberculosis, in accord with the Jadassohn-Lewandowsky law. A specific skin sensitization to the respective micro organisms occurs in both diseases.

GASTROINTESTINAL DISTURBANCES IN THE COMBAT AREA

II. PRELIMINARY OBSERVATIONS ON FUNCTIONAL DISORDERS OF THE DIGESTIVE TRACT

CAPTAIN ALEXANDER RUSH
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During a twelve month period beginning March 28, 1942 200 patients were admitted to a large hospital in the South Pacific because of "dyspepsia." Fifty-three per cent of these patients presented symptoms that were subsequently judged to be due to functional disturbances of the digestive tract. Though no organic basis for their distress could be demonstrated, these patients were found to be no less disabled than those suffering from peptic ulcer. Functional disorders constitute a major problem wherever there are large bodies of troops in the field. It is therefore considered important to record our experiences in the observation, treatment and disposition of these patients.

DEFINITION AND TYPES

Under the heading of functional gastrointestinal disease are included all those conditions in which the predominating symptoms are due to a disturbed function of the digestive tract but in which no positive objective evidence of organic disease can be demonstrated. This large group of functional disorders is subdivided into four general types based on the outstanding symptoms. Thus those patients who presented the typical syndrome of transient abdominal cramps coming on after eating and made worse by the taking of certain coarse foods are considered as belonging to a subgroup whose symptoms were due to an irritable or spastic colon. This subgroup comprises 80 per cent of the patients with functional disturbances. The next largest subgroup, which accounts for 10 per cent of the total number of patients with functional disturbances, includes those whose predominating symptoms were nausea and vomiting. There is a third subgroup with symptoms similar to those of peptic ulcer who comprise 7 per cent. Finally there is a subgroup 2 per cent of the total, which represents those suffering from symptoms of aerophagia.

PROBLEMS OF DIAGNOSIS

In civilian practice the diagnosis of a functional disorder at best is fraught with many hazards. In military practice these hazards are intensified not only because of the characteristic lack of positive objective findings but because of a conscious or an unconscious desire on the part of many soldiers to escape from an unpleasant or dangerous situation. For therapeutic as well as diagnostic reasons every effort was made to rule out organic lesions. Since a gastroscopic examination was not possible, the percentage figure for patients with functional disorders may include some whose primary digestive disturbances could have been secondary to chronic gastritis.

CLINICAL HISTORY

In general, a careful history, as in all cases of disease of the digestive tract, proved to be of paramount importance in reaching a correct diagnosis of functional disorders. All of the patients were found to be in a state of either acute or chronic emotional ferment. This characteristic emotional unrest was frequently found to spring from intense feelings of resentment toward a temporary local situation or from persistent feelings of anxiety or fear. These feelings often were present beneath an outward appearance of calm. When specific symptoms were considered, every sort of combination was encountered. Except in 2 per cent of patients presenting the ulcer syndrome, the most striking characteristic of functional disturbances was the food-pain relationship. This contrasted sharply with the usual pain-food-ease picture that typified ulcer in the absence of obstruction. The patient with functional disturbances complained that cramplike pains occurred shortly after meals but that they disappeared spontaneously within an hour or so or were promptly relieved by vomiting or a bowel movement. The patients with ulcer, on the other hand, commonly experienced a more or less steady pain which came on before meals and was relieved promptly by the taking of food. While this history of a food-pain relationship was helpful as a clue, it was by no means pathognomonic.

EXAMINATIONS

Physical Examination—The findings on physical examination were seldom striking. A tender and palpable sigmoid colon was encountered in approximately one third of these patients. There were no other physical findings that appeared to be at all characteristic of functional disease of the gastrointestinal tract.

Examination of Stools—With regard to color, consistency and frequency, the stools presented little that could be called diagnostic. Particular attention was paid for a time to the presence of mucus, which was found in the stools of 25 per cent of these patients. This compares with 23 per cent in patients with peptic ulcer, indicating that the presence of mucus in the stools is of little importance in the differential diagnosis.

X-Ray Examination—An x-ray examination of the upper gastrointestinal tract was made in 80 per cent of our patients considered to have functional disorders. Only in 2 patients, who were chronic air swallowers, were any findings of note demonstrated by x-ray. No significant abnormalities in emptying times were observed. Barium sulfate enemas were performed in but a small number of instances and revealed nothing remarkable. This high percentage of x-ray examinations with negative results might seem at first glance to indicate a tremendous waste of time and talent. How-

ever, in the group with functional disorders x-ray examination has proved to be of value in ruling out more serious organic lesions and to have some therapeutic advantage from a psychologic point of view

ARMY GENERAL CLASSIFICATION TESTS

The army general classification tests are designed to classify all soldiers in terms of their ability to learn their duties in the service. They are a measure of the general level of a man's abilities rather than his ability in a special field. Arrivals at recruiting centers who are able to read and write English are sorted by means of the general classification tests into five broad classes with respect to their ability to learn the duties of a soldier.¹ The following five classes have been called army grades

Army Grade I Very rapid learners, about 7 per cent of the men in the Army

Army Grade II Rapid learners, about 24 per cent

Army Grade III Average learners, about 38 per cent.

Army Grade IV Slow learners, about 24 per cent

Army Grade V Very slow learners, about 7 per cent

each grade for four different groups of soldiers compared with the anticipated figures. The greater number of patients with functional digestive disturbances are found in grades IV and V, while the occurrence of purely functional disorders in grades I and II is extremely rare. These findings bear out in a most striking manner the clinical impression that digestive disturbances of the functional type are seldom seen among bright, alert, well integrated persons. Conversely, functional disorders of the digestive tract are more commonly seen in poorly integrated persons who have difficulty in learning and in adapting themselves to the conditions of the service. Thus from a medical point of view the selectee who on the basis of his army general classification test gives indication of being a poor risk has been so proved while under the stress and strain of field conditions in the combat area.

RESPONSE TO THERAPY

On dietary measures and the limited use of antispasmodic drugs 58 per cent of the patients with functional disorders showed no improvement. Of those

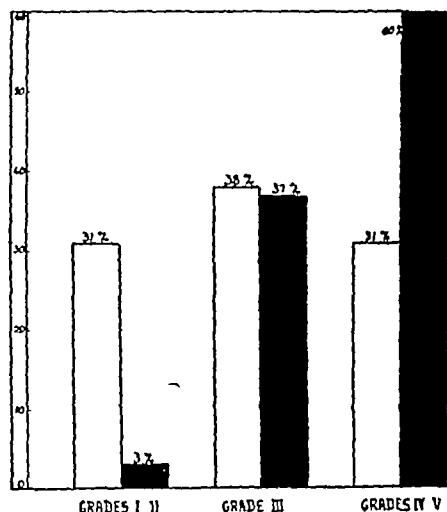


Chart 1—Soldiers with functional digestive disease

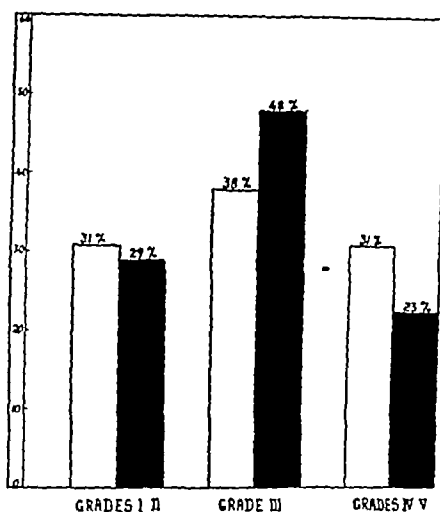


Chart 2—Soldiers with peptic ulcer

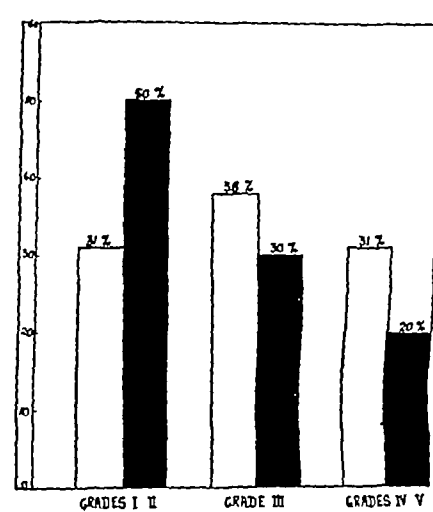


Chart 3—Highly trained enlisted medical men

Distribution of patients with functional gastrointestinal disturbances (chart 1) and patients with ulcer (chart 2) compared with highly trained enlisted medical men (chart 3), in the army general classification grades. In each chart a comparison is made between the normally anticipated distribution (white columns) and the distribution obtained for the subjects under consideration (black columns).

Those who make high scores are usually those who do best in the various army training courses and excel in their daily duties in the service. Those who make low scores are inclined to be less alert and are likely to encounter difficulty in adapting themselves to new situations.

Comparison of Army General Classification Scores Percentage in Each Grade in Health and Disease

	Anticipated	713,000 Selectees	Hospital Personnel	Ulcer	Functional Disease
Group I	7	8	7	0	0
Group II	24	29	43	29	3
Group III	38	30	30	48	37
Group IV	24	21	12	23	32
Group V	7	12	7	0	28

The army grades on the general classification tests were computed in percentage for our patients with ulcer and the patients with functional disorders of the digestive tract. The charts graphically illustrate the findings, while the table gives a breakdown of the percentage in

who showed good improvement 90 per cent had experienced symptoms for no longer than twelve months. A nonlaxative, low residue diet was uniformly prescribed. During the first two months tincture of belladonna 15 minims (1 cc) and phenobarbital 0.032 Gm four times a day were employed. The results were not impressive. A period followed during which these drugs were not available. While no detailed record was kept, the clinical impression was gained that the lack of these drugs made very little difference in the course of the symptoms. Recently these drugs were reinstituted in treatment in accordance with the suggestions of a psychiatrist, Major John M. Cotton. M. C. Belladonna was administered in gradually increased doses to the limit of tolerance. Fifteen minims of the tincture four times a day twenty minutes before meals and at bedtime served as the initial dosage. This was raised to 16 minims on the second day, and on each subsequent day a single drop was added to each dose until relief or toxic symptoms such as blurred vision, tachycardia or excessive drying of the mouth occurred. It is too early to make any positive statements as to the value of this regimen but it can be said that the early results have been promising in overcoming the acute attacks of postprandial abdominal cramps.

¹ Personal Classification Tests, War Department, Technical Manual 12 260, Washington, D. C., Government Printing Office, 1942

DISPOSITION

The disposition of patients suffering from functional digestive disturbances in the field is a problem. These patients as far as physical and laboratory findings reveal have no organic lesions. In this respect they appear as healthy as the next soldier. Nevertheless they experience definite symptoms that in many instances seriously interfere with the satisfactory performance of their duties. Their ill appearances to the contrary notwithstanding are not imaginary but real. An opinion as to this type of patient's fitness for duty based on purely objective findings is obviously unsatisfactory. For this reason whenever possible, further information as to the patient's military qualifications under simulated or actual combat conditions were sought from commanding officers and battalion surgeons. Information obtained in this manner was frequently found to be of inestimable value to us in reaching a decision as to the proper disposition of the soldier.

In this connection three possible courses presented themselves: (1) return to duty, (2) transfer to a labor battalion or (3) transfer to a general hospital in the zone of the interior for reclassification. After careful hospital study and education it was found possible to return to duty 88 per cent of those patients who had been admitted for the first time in contrast to 56 per cent of those with more than one such admission. The patients whom we thus returned to duty frequently were accompanied by a letter to the commanding officer explaining the findings and the nature of the disease. It was suggested that if the soldier failed to adapt himself satisfactorily and if his symptoms persisted with sufficient intensity to interfere with his efficiency he be returned to the hospital with information concerning his general fitness as a soldier.

It was learned that to keep such a soldier in his unit was detrimental to the morale of his outfit and not in the best interests of the service. An illustrative incident was reported to us of a soldier who eventually entered active combat although suffering from a functional disturbance. Under the tremendous emotional strain of being under fire his hitherto relatively mild symptoms became acute and he collapsed in a foxhole, being unable to proceed farther. He was found by two litter bearers and was placed on a stretcher. While he was being transported to a field dressing station one of the litter bearers was killed and the other seriously wounded. This seems an inordinately heavy price to pay for the health of a soldier who previously had given definite evidence of emotional instability sufficient to render him unfit for combat duty. This incident not only cost the life of a valuable litter bearer but may have prevented the evacuation of a wounded soldier in serious need of surgical care. Again this is but a single occurrence but it serves to illustrate the point that persons suffering from repeated attacks of a functional digestive disorder are more likely to be a liability than an asset under fire and for that reason should be placed from the beginning in a situation where their abilities have a greater chance of success.

During the early months the sending of such patients to a labor battalion or service company seemed a promising solution. This course was adopted with the hope that a little "discipline" would make "men" out of these persons. This practice we soon discovered to be disastrous. Instead of the soldier being improved, he usually was returned to the hospital with his symptoms more deeply entrenched.

Recommendation for a transfer to a general hospital in the zone of the interior was made with regard to 22 per cent of the patients suffering from functional gastrointestinal disturbances by a disposition board in our hospital. When a patient of this type was readmitted because of persistent symptoms regardless of all therapy and all efforts of his command to place him satisfactorily, he was brought promptly before a board of medical officers. The majority of patients so presented, after a careful study of the man and the situation were recommended for transfer to the zone of the interior as unfit for combat duty. How many more of our patients were similarly recommended by disposition boards in other hospitals it is not possible to say. Our figure is lower than that for soldiers who obtained certificates of disability discharge from the Lawson General Hospital as reported by Chamberlin.² It is not clear just how to account for this disparity other than that patients admitted to army general hospitals are selected in that they have been referred from other units because of serious physical defects. In contrast the forward hospitals draw their patients directly from the troops in the field.

CONCLUSIONS

1 Patients with functional disorders of the gastrointestinal tract constitute 53 per cent of the group admitted to a large hospital in the forward area because of dyspepsia.

2 The characteristic complaint of these patients is distress induced by the taking of food.

3 The scores of the army general classification tests give striking confirmation to the clinical impression that the majority of these patients are incapable of adapting themselves to field service and are poor risks in the combat area.

4 For the most part the response of these patients to therapeutic measures in the field is transient and poor.

5 Patients who are shown to be poor learners and who persistently fail to make any satisfactory improvement should be returned promptly to the zone of the interior for reclassification.

² Chamberlin, Donald T.: Peptic Ulcer and Irritable Colon in the Army. *Am J Digest Dis* 9: 245-248 (Aug) 1947.

Surgical Conquest of Goiter—The surgical conquest of goiter is due in large degree to Theodore Kocher, who in 1872, at the age of 31, became director of the surgical clinic at Bern, Switzerland. The high incidence of goiter at Bern gave him an unusual opportunity to study the disease. Lister's methods had just been adopted by Kocher's Swiss German and Austrian colleagues, and the specter of infection in operative wounds banished Kocher who was a master technician as well as a keen thinker devised new methods for obtaining satisfactory surgical exposure of the thyroid for controlling hemorrhage and for avoiding damage to the nerves of the larynx. In 1883 he reported his first ten years' work: a total of 101 goiter extirpations with a mortality of 12.8 per cent. In this famous paper he not only described the essential features of the modern technique for removing thyroid adenomas but he identified a new clinical condition which he called *cachexia strumipriva*. All but two of a series of 18 patients in whom he had removed the entire thyroid developed a syndrome characterized by lethargy, puffiness of the face and dryness of the skin. Kocher rightly concluded that this was due to a lack of thyroid secretion.—Haagensen, C. D., and Lloyd, Wyndham E. B. *A Hundred Years of Medicine*. New York: Sheridan House, Inc. 1943.

Clinical Notes, Suggestions and New Instruments

BICORNATE UTERUS WITH PREGNANCY IN EACH HORN

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During the embryologic development of the female the two müllerian ducts fuse from below upward to form the vaginal tract and the uterus. The numerous anomalies of the female genital system that have been reported in the literature can be ascribed in the great majority of cases to lack of fusion at any location throughout the extent of the two canals and in the remainder to the rudimentary development of one duct.

In various animals the müllerian ducts normally do not fuse and consequently two tubular uteri are present. In the human being, in the event of incomplete development of one duct, the rudimentary side appears as an appendage to an apparently normal uterus. Since Mauriceau and Vassal reported the first case in 1669, over 100 cases of varying degree and extent have been described in the literature.

Usually menstruation occurs from the two uteri simultaneously, however, it may come from one horn at a time. Pregnancy may occur in one or both horns. Muller has recorded cases of menstruation from the empty horn during the pregnancy. In one instance twins were found in one horn. It is conceivable that, should each horn contain an ovum, superfetation might occur. Several such cases have been reported in the literature.

In the ordinary course of events, pregnancy in one horn is undisturbed, the uninvolved or nonpregnant horn growing and forming a decidual membrane typical of that found in an ectopic pregnancy. In some cases this decidua may be expelled without disturbing the pregnancy of the other horn. In other instances the course will resemble that of an abortion for which the usual treatment is instituted. Being forewarned as to the presence of an anomalous development of the uterine tract,

the surgeon proceeds with extreme caution during the curettage.

The sparsity of reports which have been recorded indicate that it is unusual for gestation in a bicornate uterus to continue uneventfully to term. Should this occur, the following complications are quite frequently encountered:

1 Weak pains may occur associated with atony in the third stage with resultant postpartum hemorrhage.

2 Dystocia may be produced by prolapse of the nonpregnant horn under the other with incarceration in the pelvis or by the nonpregnant cervix being forced downward to the vulva with the head.



Fig 1—Flat posteroanterior film of the abdomen during first stage of labor.

A review of the literature has revealed a definite lack of adequate reports on pregnancies in each horn of a bilateral uterus and in no instance successful termination of such pregnancy with viable children.

In 1925 Rowlett¹ of Florida described a case of a double uterus with pregnancy of each horn. The condition had been

discovered during a laparotomy two years previously. Despite this knowledge the patient went into labor after five months' gestation miscarrying male fetuses weighing 3 pounds 4 ounces (1,420 Gm) and 2 pounds 3 ounces (990 Gm). The question of superfetation was raised.

In 1933 Wong² of the Peiping Union Medical College in Peiping, China, reported in considerable detail a pregnancy



Fig 2—Appearance after intrauterine injection of iodized oil six weeks post partum.

in one horn of a double uterus. At six months there occurred all the signs and symptoms of a miscarriage ending in expulsion of a decidual cast of the nonpregnant horn. Convalescence was uneventful, and three and one-half months later the patient was delivered of a normal girl baby. The puerperium progressed normally. A special examination forty days post partum attempted to prove by hysterosalpingographic studies the presence of a bicornate uterus. After repeated attempts Wong and his associates were able to demonstrate only the right uterine cavity and its tube. One week later the test was repeated and both cavities were demonstrated. There was only one cervical canal, and the opening into the left uterine cavity was just within the external os and so was passed by the cannula on previous tests.

In 1934 Barrett³ of the Vanderbilt University Hospital in Tennessee reported a bicornate uterus with a pregnancy in each horn. Both infants were born prematurely and died shortly after delivery. The patient had had six previous pregnancies, of which three aborted and two miscarried (one of twins). One pregnancy went to term, producing a girl who was 5 years old at the time of the reported pregnancy.

In 1939 Johnston⁴ of Akron, Ohio, reported a case with a dead fetus in one cornu and a normal pregnancy in the other. The condition was discovered during a laparotomy in which the cornu with the dead fetus was mistaken for a fibroma and removed. The remaining pregnancy continued uneventfully to term, and the delivery of a full term normal infant was accomplished with low forceps.

1 Rowlett W M. Report of Case of Double Uterus with Pregnancy of Each. *J Florida M A* 12 5 (July) 1925.

2 Wong Amos I H. Pregnancy in a Double Uterus. *Chinese M J* 47 61 65, 1933.

3 Barrett, Arthur B. Bicornate Uterus with Pregnancy in Each Horn. *Am J Obst & Gynec* 28 612 (Oct.) 1934.

4 Johnston W M. Bicornate Uterus. *Am J Surg* 44 662 (June) 1939.

The case which I present is of particular interest since it represents the only recorded case in the literature of pregnancy in each horn of a bicornate uterus which proceeded uneventfully to term with consequent delivery of two normal viable children.

REPORT OF CASE

On Jan 20 1941 at 8 a m Dr J S Lundholm referred to me Mrs R T, white, aged 24, who was in active labor. Her menstrual history was normal (last menstrual period April 8, 1940) although her menses had been extremely profuse. One year previously she had had a delivery in the home. The membranes had ruptured spontaneously prior to the onset of labor, which continued with severe dystocia for twelve days, resulting in the delivery of a female child which lived for only a few hours. The dystocia was undoubtedly produced by the incarceration in the pelvis of the nonpregnant horn.

Examination revealed an extremely broad abdomen containing two sets of fetal heart tones 140 per minute on the right and 135 on the left. Both fetal heads were palpable and the diagnosis of twins was readily made. There appeared to be a depression between the two fetuses a fact which aroused a suspicion of the presence of a bicornate uterus. Inspection of the introitus revealed a third degree cystocele and rectocele. According to the roentgenologist's report, a flat posteroanterior film of the abdomen showed the presence of twins. The two fetal heads were floating above the pelvic inlet. Both heads



Fig 3—Posterior view of surgical specimen

were presenting, one on each side of the pelvis. The fetal spines were directed laterally and the small parts were directed toward the maternal spine. There were no developmental anomalies of the fetuses or of the maternal pelvis. Both of the fetal heads appeared to be attempting to enter the pelvis. There was evidence of pressure on both heads, which is not unusual during labor, but the pressure on one of the heads appeared to be due to the other head pushing against it (fig 1).

At 10 a m there occurred a relatively simple spontaneous delivery of a viable 5 pound 12½ ounce (2,620 Gm) boy. The placenta was delivered intact at 10 12 a m from the right horn, but, despite firm contraction of this horn profuse hemorrhage continued. At 10 19 a m a living 6 pound 9 ounce (2,860 Gm) girl was delivered by manual pressure over the left fundus and its placenta followed intact at 10 25 a m. The left horn remained atonic but with continued gentle massage and the administration of pitocin and ergotamine tartrate (gynergen) eventually contracted nicely. Two firm masses were palpable in the suprapubic region. There were no lacerations. Profuse hemorrhage again occurred at 1 p m but responded well to treatment.

The blood count of the mother revealed a hypochromic anemia of pregnancy (hemoglobin 38 per cent and red blood corpuscles 2,910,000). She was given a transfusion of 550 cc of whole citrated blood. The puerperium was otherwise uneventful.

On the seventh postpartum day a vaginal examination was performed under aseptic technique. Specular examination revealed a single cervix and no vaginal septum. The third degree cystocele and rectocele were of course still present. On bimanual

examination there were apparent two widely separated uterine bodies with no definite palpable point of fusion.

Hysterosalpingographic studies were undertaken on March 6, 1941, approximately six weeks post partum. Fifteen cc of iodized poppyseed oil was injected through the cannula, which was inserted so that the tip rested just within the external



Fig 4—Anterior view of surgical specimen

cervical os. The roentgenologist reported that a flat film of the pelvis made after an intrauterine injection of iodized oil showed a bicornate type of uterus filled with a radiopaque material. The cannula extended into the right uterine horn for a distance of 15 cm. The horns of the uterus were about 3 inches in length. This increase in the size of the uterus was probably due to subinvolution. The fallopian tubes contained some radiopaque material but were not abnormal (fig 2).

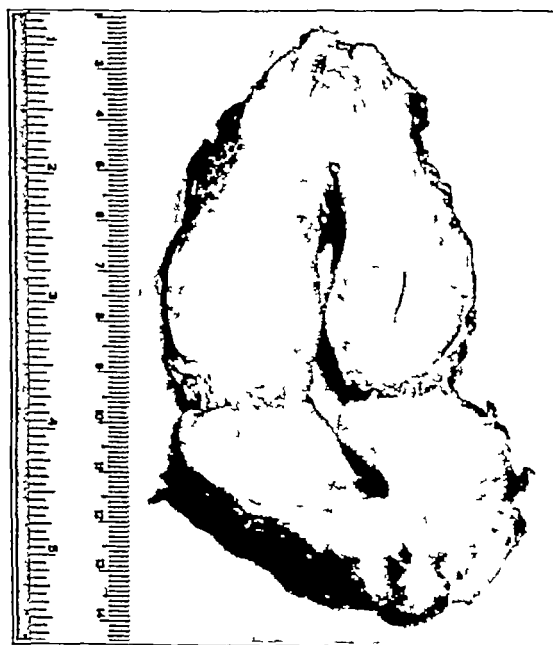


Fig 5—Sagittal section of surgical specimen

The mother and twins were dismissed from the hospital in excellent physical condition in two weeks. The twins are still alive at the time this paper is being written and are progressing normally.

Approximately three months following her dismissal from the hospital, the patient was readmitted with severe lower

abdominal cramping. Pelvic examination revealed a firm tender mass in the left fornix which could not be displaced upward. A diagnosis was made of prolapse of the left horn of the uterus with incarceration in the pelvis. Since the patient had two healthy children and her financial status did not warrant prolonged conservative treatment, surgery was instituted after a preliminary blood transfusion. An anterior and posterior colporrhaphy was first performed to repair the pelvic floor and then the abdomen was opened by means of a midline suprapubic incision. The incarcerated fundus was relieved with some difficulty. The uterus then presented itself as two widely divergent horns each with its own tube and ovary and with no visible site of fusion. The body of the uterus was then removed in toto, the process revealing the site of fusion to be just above the internal cervical os. The pathologist reported that the specimen was a uterus weighing 85 Gm. The uterus had two bodies and one cervix. The bodies were entirely separate except at the point of union with the cervix. They were cylindric and measured 3.5 and 3.0 cm in diameter. The uterine canals were not enlarged and were lined with velvety smooth pink endometrium. The muscle walls averaged about 1.5 cm in thickness. The cervix presented no important changes. In order to save the specimen, no sections were made. They were considered unnecessary. The diagnosis was uterus bicornis unicollis (figs 3, 4 and 5).

The patient made an uneventful recovery and has had no further difficulty.

THE USE OF BIODYNE OINTMENT FOR BURNS

JOHN WINSLOW HIRSHFELD, M.D. MATTHEW A. PILLING, M.D., AND
MARK E. MAUN, M.D., DETROIT

Bio-Dyne ointment has been publicly advocated for the treatment of burns.¹ In recent articles in the lay press it has been claimed that burns so treated heal painlessly and with remarkable rapidity. It has been stated that the ointment contains substances which stimulate epithelial proliferation. These public claims have resulted in inquiries by many patients and often in the demand that Bio-Dyne be used by physicians. If Bio-Dyne ointment has these properties, it represents a truly remarkable advance in burn treatment. Since, however, we were unable to find in the medical literature any experimental or clinical support for these claims, we decided to study the effect of Bio-Dyne ointment on fresh wounds of experimental animals and man.

In order to test the epithelial growth stimulating effect of Bio-Dyne as compared with petrolatum, these ointments were applied to fresh wounds made by removing the epidermis with the Padgett dermatome. These wounds of uniform depth must reepithelize themselves primarily from the epithelium of hair follicles and the sebaceous and sweat glands of the dermis. They are ideal for testing a substance designed to stimulate epithelial growth. Two such wounds were made on each of 8 dogs, on 8 domestic pigs and during the course of skin grafts on several human beings. Hence it was possible to treat a control wound with petrolatum impregnated gauze and the other wound with Bio-Dyne ointment. Specimens were removed for microscopic examination before application and at intervals after the application of Bio-Dyne ointment or petrolatum. Each time the dressing was disturbed for removal of a specimen a fresh supply of Bio-Dyne ointment or petrolatum was put on the wound. The specimens were fixed in solution of formaldehyde and stained with hematoxylin and eosin. Specimens were taken from dogs and pigs at intervals from 6 to 192 hours. We were able to persuade only 2 patients to submit to excision of tissue for examination, and therefore human material is limited to 2 microscopic observations, one at 4 and one at 5 days. However, the clinical course of several additional patients could be observed.

Examination of the wounds of man and animals revealed no evidence that Bio-Dyne accelerated the healing process.

The wounds treated with Bio-Dyne and those treated with petrolatum gauze healed in the same time. The dressings were more painful in the wounds treated with Bio-Dyne because the Bio-Dyne ointment seemed to dry or to be absorbed, leaving the gauze dry, stiff and adherent to the wound. The gauze impregnated with petrolatum remained greasy and was easily removed.

Examination of the prepared slides confirmed the clinical impression that Bio-Dyne failed to promote epithelization more rapidly than petrolatum gauze. In view of the lack of evidence that Bio-Dyne accelerates epithelial growth, we are not convinced that Bio-Dyne ointment has any advantages over petrolatum gauze for the treatment of burns.

Special Article

THE ABATEMENT OF NOISE

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AND

JOHN D. GOODELL

DETROIT

It is a commonplace fact that the nation's present circumstances of living and working have greatly multiplied both the quantity and the continuity of noise. At the same time justification for noise seems better established so that indignation however warranted, meets some disfavor. If the period of national stress may so accentuate the ill effects of noise that a disturbed people will demand and secure relief both for the duration of the conflict and thereafter, at least one constructive end will have been attained.

When expanded industrial plants operate on three shifts instead of the customary one day-shift their contribution to the noise and the ill effects of noise throughout the community may be enormously increased. Automobile traffic may be as heavy at midnight as at 5 in the afternoon. Increased numbers of streetcars, replacing unfueled automobiles and operating continuously, may make both days and nights unendurable. Recreation through noisy sports at 2 o'clock in the morning may seem reasonable to those workers whose tasks were completed at midnight, but not so for those other workers then seeking sleep, with duties beginning at 7. In turn, each group disturbs some other. Organized night trucking, planned to avoid daylight road congestion, perpetuates the din of the day throughout the night.

The acceptance of noise as an inescapable necessity possibly reflects unintelligent complacency. A proper understanding of the established ill effects of noise and the practicability of noise control would appear to warrant sponsorship of noise abatement as a fecund war measure. The purpose of this report is to assert that much current noise is needless, that effort against noise is a widely neglected but legitimate portion of over-all warfare, that methods of noise control are practical and no longer technically mysterious, and that behind some of the more publicized evils of the day such as wilful absenteeism, may be found the insidious disturbances from noise.

From the Department of Surgery and the Surgical Service of Receiving Hospital, and the Department of Pathology of Wayne University College of Medicine.

¹ New York Herald Tribune July 18 1943 Time Magazine 40 94 (Oct 5) 1942 Reader's Digest 42 75 (Jan) 1943

This publication represents a report of the American Medical Association's Committee to Study Air Conditioning consisting of Dr. Carey P. McCord, Detroit, chairman, Dr. Walter M. Simpson, Dayton, Ohio, Prof. Constantin P. Yaglou, Boston, and Dr. Allan L. Barach, New York, together with Mr. John D. Goodell, Detroit, as a temporary member.

A PREFATORY STATEMENT OF NOISE ABATEMENT
PRINCIPLES

Every successful suppression of noise results from the application of one or more of a large number of somewhat unrelated principles. None may be described in detail, but some of the fundamental laws are explained sufficiently to provide background for the specific examples in the tabulation which follows and the suggestions appearing in various sections of this report.

Fundamentals—1 Frequencies which produce auditory impressions are propagated by means of pressure waves. When a vibrating body strikes a series of rapid physical blows against the air, wood, metal or whatever substance with which it comes in contact, this impact is either cushioned or transmitted in direct proportion to the mass per unit of volume of the material which receives the blow.

2 Just as an electrical circuit presents an impedance to the flow of current so the cross section of an acoustic conductor presents an impedance to sound energy. The most efficient transfer of energy between two mediums occurs when the impedances are matched.

3 Every object which can be set into vibration so as to generate audible energy has a natural period of oscillation. This means that if it is stroked, struck or plucked it will always generate a sound wave containing the same fundamental frequency.

4 When a sound wave is generated in the open air, it continues to travel until the energy is dissipated. When a sound wave is generated within a room, it is reflected from the walls, ceiling, floor and furnishings, the energy finally being dissipated during countless journeys between reflecting surfaces. A human being in the room receives an auditory impression of the sound on each reflected journey past his ear. The intelligence is conveyed by the original impulse, the rest is a confusing jumble. Listening to speech under reverberant conditions is like trying to watch motion pictures in a room constructed entirely of mirrors.

Related to reverberation, but not identical, is the "focusing effect" of certain structures. By focusing effect is meant the tendency for large amounts of reflected sound to arrive at the listening point from directions other than that of the source in such a manner that reinforcement takes place.

Acoustic treatment of ceilings and walls has relatively little value in reducing low frequency reverberation.

We have conducted a series of experiments in connection with the elimination of noise, particularly with respect to low frequencies. If two sound waves of equal intensity and frequency coincide in such a manner that the compressions of one correspond to the rarefactions of the other, they are said to be in opposite phase and the result approaches silence. This curious effect where two sounds are subtractive may be used to advantage in noise reduction.

The experiment performed is presented graphically in the accompanying illustration. The sound source in the center radiates a wave of specific low frequency. The highly directional microphone (B) is placed a short distance away facing the sound source. The output from the microphone is fed through an amplifier to the four loudspeakers, which are housed in directional baffles faced away from the sound source. The amplifier is designed with electrical filters to eliminate all frequencies except those which the system is designed to cancel. The elements of the system are so arranged that the sound wave from the speakers occurs 180

Tabulated Principles and Examples of Their Application

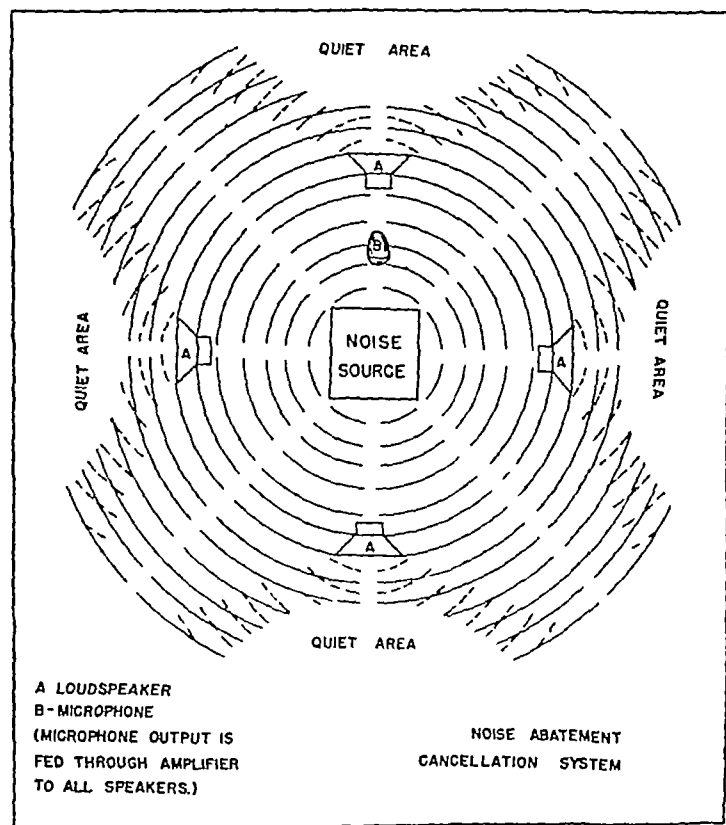
PRINCIPLE	APPLICATION
1 When a physically small object such as a piano string is set into vibration, it presents a relatively tiny surface to the air. If it is in firm contact with a large acoustic conductor such as the sounding board of a piano the transfer of energy is more efficient and results in effective physical amplification. Acoustic isolation of small vibrating bodies from all conductors and "sounding board" surfaces is desirable in minimizing noise.	1 An example of this principle concerns the sound output of a watch resting on a tabletop. The tabletop will function as a sounding board producing sufficient amplification to make the sound output disturbing to sleep. The same watch suspended from its chain might be almost inaudible. Another demonstration of this may be made with an ordinary dinner fork. If one holds the fork in the air and plucks the tines the sound will be puny. The instant one touches the handle of the fork to the table the sound is increased amazingly.
2 The deliberate mismatch of impedances for purposes of minimizing noise transmission may be applied to the construction of walls. Associated with this approach is the desirability of using non-elastic materials for constructions that may function as undesirable transmitters.	2 Walls should be built of materials with high density and mass the impedance of which is great compared with that of air. Proper installations of insulating materials in wall suspensions and between partitions the impedance of which differs greatly from that of the walls are also valuable. Plywood is an example of unsatisfactory wall material because of high elasticity and low mass. Concrete may be desirable because of opposite characteristics. Certain fibrous materials may be useful in spite of their low mass and density because of their low elasticity.
3 Sound conditioning and air conditioning are closely related projects. With the elimination of the necessity for open windows to provide ventilation it becomes possible to isolate the interior of a structure from almost all exterior noise.	3 Noise reduction is a direct result of air conditioning in public conveniences as well as in structures. An obvious example of this appears in modern streamlined trains where air conditioning has brought about greatly increased insulation against noise. This unquestionably is a factor in the decreased fatigue of passengers on these improved trains.
4 The experimental results of many investigators have shown that injury may result from bone conducted sound. Protection from injury by acoustic energy transmitted through the floor may be obtained through rubber soled shoes, insulated platforms for workers and isolation of energy sources by means of cushioning supports.	4 In this connection it is important that the isolating material be adequately loaded. In other words it is possible to use such a large mat of rubber under a working platform that the weight it carries will only slightly compress it. In this case the rubber mat may be so springy as actually to increase the vibration energy transmitted to the worker.
5 In some cases relatively quiet operations or devices may be substituted for those causing noise.	5 Welding may be used instead of riveting e.g. in shipbuilding or tactical vehicle manufacture. Light signals are often a practical substitute for telephone bells and other noisy devices intended to attract attention.
6 Under certain conditions a small percentage of reverberant noise may serve as an isolating medium. In an absolutely quiet room the continuity of a worker's thought is disrupted by the overheard irrelevant intelligence in nearby conversation. In a slightly reverberant large office such sounds are blended in the general noise level and the distraction is decreased.	6 It is not always desirable to partition large offices. When several people are working in proximity a low general noise level serves to mask the intelligibility of nearby conversation.
7 Percussive sounds particularly intermittent ones of high frequency are a source of pronounced irritation. In many cases the elimination of a few such seriously annoying sounds will satisfactorily reduce the fatigue of workers.	7 In order to avoid the intermittent rattle of loose parts on machines friction of an unoiled surface against another regular maintenance work on machinery and the damping of unnecessarily vibrating parts are indicated.
8 Under circumstances in which the original sound wave is generated at high intensity (80 decibels or more) the prime effort should be directed toward reducing the intensity of the sound at its source.	8 Reduction of audio energy sources may be accomplished by the application of several principles mentioned elsewhere.
9 In a reverberant room the decay of a sound wave is slow and succeeding impulses may occur while reflections of the original impulse continue. In this case a sound level is established which may greatly exceed the level which would be attained without reflection.	9 The installation of acoustic material on the walls (or else where) will reduce reflection of sound waves. The increased use of carpets, wall hangings and drapes will serve this same purpose but a larger area being required to obtain the same result.

degrees out of phase with the wave from the sound source and produces cancellation. It is believed that this method of noise elimination may be applicable to certain previously difficult problems, particularly under outdoors or nonreverberant conditions.

NOISE ABATEMENT IN INDUSTRY

It may not be shown that all industries are disturbingly noisy, but in a recent prewar publication 467 occupational pursuits out of a total of 7,000 were listed as clearly contributing undesirable noise output. This figure fails to indicate the total probable exposure, since many noise free operations are customarily carried out in proximity to noisy ones. As a rule the architecture of manufacturing plants is such as to accentuate reverberation.

Chiefly from industrial experience, it is now accepted as established that noise produces significant deafness



Subtractive effect of sound waves in opposite phase

both on a functional and on an organic basis, that noise causes or contributes to pathologic fatigue and that noise under some circumstances lowers the work output. Less certainly established, but probable are the indications that noise unduly contributes to absenteeism, increases work spoilage and generally hampers the worker, and especially the new worker in job adjustment. It is known that in a few trades all, or nearly all, old-time workers suffer varying degrees of deafness. It is deplorably true that heavy forge operators are so nearly universally impaired as to hearing that partial deafness is recognized as some proof of experience in the trade.

One typical noise problem, together with its remedies, is here presented as generally illustrative, but particularly illustrative of the fact that steps other than wall and ceiling treatment may be required in many situations. This example is slightly disguised for military reasons. In a certain plant engaged in the manufacture of steel balls (each weighing about three-fourths of an ounce), with a weekly output to be reckoned in

millions, it became necessary to carry out visual and automatic inspection for defects and size. In the visual inspection process the balls were scooped up from sheet metal baskets and dropped onto metal tables. After inspection the balls were tossed by the score or more of inspectors into various metal containers, depending on the nature of the defect. Nearby, the size inspection was carried out by several automatic machines. In all instances the balls poured from large hoppers into smaller ones, thence traveling through chutes to sizing rolls, the various sizes falling on other metal chutes and ultimately dropping into a series of metal boxes. The total output of noise was horrendous. The area of greatest annoyance was not immediately in this workroom but in adjacent offices separated only by thin partitions.

To abate this noise to reasonable comfort proved to be comparatively simple, using easily available materials and methods that might be carried out by average plant personnel and facilities. The following steps proved adequate:

All portable sheet metal containers were changed to wood.
All table surfaces were covered with plywood.

All chutes were lined with leather.

Vibration of the metal hoppers during the refilling process was decreased by refilling when half empty. This increased the inertial mass and damped the vibration tendency.

The under side of all other sheet metal surfaces over which the steel balls traveled was damped by a thick undercoating of quick drying mineralized paste.

All piping throughout the department was insulated.

Lastly, and by this time not altogether necessary, a double wall partition was erected as a protective barrier for adjacent offices. This wall was so constructed as to be "floated" rather than being built integrally into the general structure.

Through almost endless variations, noise problems arise in industry. For most of these situations there exist little used, but no less practical and simple, remedies. It is fallacious to claim that workers become inured to noise. They may become inured on the basis of deafness, but any psychologic adjustment of noise that may appear to take place must be reacquired on a day by day basis. Heretofore, compensation for injury in industry has largely excluded such disorders as occupational diseases. Whatever merits reside in broadened compensation provisions that characterize some new laws, it must be reckoned that increased impetus will be given thereby to the better control of injurious noise in industry.

NOISE ABATEMENT THROUGH ARCHITECTURAL FEATURES

Present and prospective needs inescapably require a wider application of architectural noise prevention. Every structure designed for the housing of the activities of human beings will represent architectural imperfection in the absence of appropriate noise control features. Apart from a somewhat restricted field of noise treatment, the building trend distressingly favors more, rather than less noise. High costs both of material and of labor make some flimsy construction of small residences almost inevitable. As street noises increase, obviously there is need for greater insulation. To accomplish noise privacy it becomes necessary to provide two structural features: (1) a design of wall structure so as to prevent the transmission of sound from exteriors and between rooms, (2) sufficient absorption within rooms that the reverberation time will not be excessive. Contrary to some popular and

pseudo architectural concepts these are two distinct matters requiring individual solutions

Walls should be constructed of materials of high density and mass. Walls of this nature will function as excellent conductors of sound but, because of their extremely high impedance and low natural frequency, will not become secondary noise sources. In order that a wall may transmit a sound to the air in an adjacent room it must function not only as a conductor but as a projector or radiator. Hence what would appear to be a failure in the use of highly conductive materials to provide sound insulation between rooms is actually desirable.

Many people believe that heat insulation and sound insulation entail identical solutions. This is not entirely true although most porous materials provide good heat insulation and also have desirable sound absorptive qualities. Measurements of the insulation provided by porous materials indicate that they have relatively little value by themselves unless they are extremely thick. These materials are most effective in sound insulation when they are supported in an air space between two rigid partitions. Properly installed, they will contribute considerably to the over-all insulation provided by a wall.

MISCELLANEOUS ITEMS

Utter silence, apart from certain laboratories, motion picture studios and a few other places is never the objective of noise abatement. Human adjustments are such that total sound absence is disturbing, and any break in the silence is then startling and at times terrifying. A low background of 20 to 30 decibels of sound is comforting rather than annoying.

In industry the satisfactory operation of many machines is determined by the ears of the operator. Conscious effort in the detection of these telltale sounds constitutes the chief complaint of many workers against ambient noise. The situation is akin to that in medicine when auscultation is made impossible or difficult by surrounding noise.

Music during work may be advantageous under some circumstances and anathematous under others. In work, every job may lead to rhythmic muscular motions—every job having its own variations. The varying tempos of music may wholly upset job rhythms, reduce production and indirectly cause accidents.

Good types of ear defenders, properly fitted, may reduce loudness of ambient noises as much as 80 per cent at certain levels without interfering with the opportunity for ordinary conversation. While the molded fitting of an ear defender is highly desirable, the taking of ear canal impressions followed by the casting of individual stopples for each ear of all individuals introduces many practical difficulties.

During exposure to injurious noise levels, the larger part of the hearing loss occurs during the first hour, with only slight elevation during subsequent periods. On the other hand, recovery time is definitely prolonged if the exposure time has been extensive. Roughly, the apparent recovery time is proportional to the square of exposure time, but cumulative effects repeatedly have been demonstrated.

While sounds that are not loud may be the source of some physiologic damage and annoyance, probably only loud sounds cause organic damage to the ear.

Older persons are more likely to incur auditory apparatus damage from noise since their hearing organs possess lower recuperative powers.

Wide variations exist in different people in sensitivity to noise. Relative tolerance to noise is an acceptable concept.

In the average factory with mechanical operations, the noise level is approximately 90 decibels, or 10,000,000,000 times the least perceptible sound and 100,000 times the sound of ordinary conversation.

Holes in walls, such as for the previous passage of pipes, permit the passage of much unwanted sound. Even a key hole may transmit sound energy sufficient to warrant suppression. Under these circumstances a constriction of the sound stream takes place so that more energy passes through than might be expected. Any open air passage of any size may be of importance in reducing the transmission of noise between rooms.

Fluctuation in noisiness is experienced unpleasantly. A continuous noise from 70 to 75 decibels is endurable, an occasional increase from 40 to 70 decibels may be much more annoying.

On a psychologic basis, much discomfort arises from noise expectation. If one shoe is dropped on the floor above and the interval pending the fall of the second shoe is excessive, the tension produced by the observer's expectancy constitutes a minor example of this type of disturbance.

High frequency sounds produce greater acoustic trauma than those of low frequency, but in the long run low frequency sounds may offer greater problems because they are less easily abated. It is pointed out that trauma which is actually caused by an abrupt change in barometric pressure may be mistakenly attributed to the low frequency sound, e. g. in drop forge operations where a large hammer displaces a considerable cubic quantity of air so suddenly as to create a destructive pulse of increased barometric pressure.

In the operation of large guns, it has been shown that the effects of shock and deafness result from the primary pulse of air pressure rather than from the sound modulation of the air. The effects are closely related to the duration of the compression pulse, which is usually much shorter than the rarefaction. In comparative tests made with rifles and mortars it was found that the compression pulse from the mortar was of much higher pressure but that the maleffects were minor because of the relatively short duration of the explosion pulse from the mortar.

It is believed that, where explosive shells are intended to produce shock in personnel not subjected to direct hits, the fact that extreme explosive pressures of short duration often do not produce serious trauma while relatively low pressures of longer duration have great effect should be an important designing consideration.

Ear defenders are valuable in protecting the ear from dangerous noises associated with gun fire but may not provide protection against explosion shock.

LEGISLATIVE ASPECTS OF NOISE ABATEMENT AND NOISE PREVENTION

The control of noise by municipal or higher authority never has been wholly effective. Effectivity will never be attained until that time when both the public and

responsible officials have acquired better concepts of the significance of noise and the measures through which noise may be eliminated or reduced to inoffensive levels. The vague outlawing of the barking of dogs or the shrieking of newsboys becomes unimpressive in the face of tolerated streetcar systems that may be a thousand times more annoying, or the licensing for operation of loud speakers on trucks which rove the streets day and night shouting the dubious values of possibly questionable products or causes. Legal measures as commonly written are frequently so loosely phrased as to permit numerous interpretations and hamper enforcement. Customarily, only on complaint of disturbed citizens is consideration given to obviously disturbing noises.

Education of the public as a whole and in special groups along with necessary legislation appears to be the key to noise amelioration. Many law abiding citizens who under no circumstances would contemplate the sending up of a rocket flare on a public street or turning a flood light on an apartment house to attract the attention of a friend will unhesitatingly blanket a house and an entire block with resounding noise from a badly designed automobile horn. It seems necessary to carry out educative programs as a supplement to legislative acts for the general public, for the makers or purveyors of noisy devices, and particularly for architects and builders of various structures such as homes, hotels, office buildings and streetways.

In a previous sentence the term "badly designed" was deliberately used. In the design of automobile horns there appears to have been overlooked the fact that many accidents are unnecessarily caused by fright or confusion from the alarming intensity of the automobile horn. In recent years some horns have been redesigned to play a tune, which unduly prolongs the sound.

It is possible so to train a dog that on hearing a specific sound he will immediately wag his tail or lift a foot or perform some other reflex indication of awareness. It should not be more difficult to educate the public to respond to simple, nonirritating sounds as a warning of vehicular danger. It is obvious that a human being educated to the dangerous significance of a specific sound will react to protect himself more intelligently and more expeditely than in the midst of fright from nearby shrieking noises. It is understood that the Sparks-Withington Company has studied this problem with a view toward designing an improved automobile horn.

Designers of modern railroad locomotives have demonstrated the advantages of the mellow horn now used on diesel locomotives over the shrill steam whistle. It is actually easier to locate the direction of approach from this low pitched tone, and the countryside and cityside are spared the affront that formerly echoed from all directions.

Most legislation has failed to include provisions in building standards for protection against noise. In some measure sound abating materials are relatively cheap, but failure to specify their use or the method of application has made many buildings hideous as to abode or work because of noise disturbances. The monetary value of acoustic insulation from street noises is well recognized in some hotels where it is found

that the public will pay increased rates for rooms on higher floors or for spaces that have been properly treated acoustically.

The continued use of noisy streetcars lends affront no longer to be tolerated as a necessary evil, except under the immediate conditions imposed by war. In many cities, busses or other streetcar substitutes have measurably reduced this annoyance. Distinct advantages are to be found in the "PCC car," a quiet type of streetcar developed several years ago, the construction of which is open to all car builders throughout the country. It is believed that PCC car construction has been hampered sharply by war circumstances, although large numbers are already in use in many sections of the country. It is noteworthy that in the presence of a quiet streetcar the noise of the trolley wheel, previously unnoticed, becomes annoying, and in some instances led to the substitution of trolley shoes. This is a good example of the oft encountered experience that with the elimination of a principal noise there rise other irritating noises previously masked.

At this time a number of cities, large and small, under the aegis of the National Noise Abatement Council or otherwise are carrying out noise control programs. The patterns of these programs are similar, emphasizing publicity and education. In some instances achievements are sought on an intercity competitive basis. In addition to immediate accomplishments such campaigns will contribute to the groundwork required for more directly constructive measures.

Noise curbing activities in New York City may be referred to as an outstanding rather than representative example. In that city in one recent year 225,143 persons were issued warnings under the provisions of the Noise Abatement Code and 32,282 others were given court summons. Some of the bans included in the New York provisions are

To sound any horn or signal device on any automobile, motorcycle, bus, streetcar or other vehicle while stationary, except as a danger signal when an approaching vehicle is apparently out of control, or, if in motion, only as a danger signal after or as brakes are being applied.

To blow any steam whistle except to give notice of time to begin or stop work, or as a warning signal.

To operate any radio, phonograph or any musical instrument in such a manner or with such volume as to annoy or disturb the quiet, comfort or repose of persons in any dwelling, hotel or other type of residence.

To erect, demolish or alter or repair any building other than between the hours of 7 a. m. and 6 p. m., except in case of urgent necessity.

To use mechanical loud speakers or amplifiers on trucks, etc.

Measures of this character may be found in many cities, but it is not believed that equal activity in enforcement always prevails. The need for these curbing procedures is most clearly indicated during wartime, but they should be considered as long range projects.

EPITOME

Patient endurance of excessive and perpetuated man made noises is no longer a virtue. Injury, measurable and immeasurable, from noise such as now widely attends human life is real and not a matter for speculation. Relief from noise is procurable.

10 Peterboro Street.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

Anti-Trichomonas Vaginitis Agents

THE COUNCIL ON PHARMACY AND CHEMISTRY FREQUENTLY GIVES CONSIDERATION TO CLAIMS ADVANCED ON BEHALF OF PRODUCTS PROPOSED FOR THE TREATMENT OF TRICHOMONAS VAGINITIS. BECAUSE OF MUCH CONFUSION WHICH EXISTS ON THIS PROBLEM THE COUNCIL DECIDED THAT A STATUS REPORT SHOULD BE PREPARED. SUCH A REPORT MIGHT PRESENT AMONG OTHER THINGS A REVIEW OF THE CLASSES OF COMPOUNDS NOW IN COMMON USE AND THE TYPE OF EVIDENCE NECESSARY TO EVALUATE AN AGENT OR PROPOSED TREATMENT. OBVIOUSLY MANY FACTORS MAY AFFECT SUCH A REPORT. INVESTIGATORS MAY BE INFLUENCED BY THEIR OWN IDEAS AND OPINIONS. MANY PATIENTS WITH TRICHOMONAS VAGINITIS ARE NOT DISTURBED BY THE PARASITISM AND MANY OTHERS IMPROVE OR EXPERIENCE SPONTANEOUS CURES IN A MATTER OF MONTHS. TOO OFTEN THERE ARE NO CONTROL STUDIES IN CASES WHICH FAIL TO IMPROVE SPONTANEOUSLY. FREQUENTLY BECAUSE THE PATIENT IS INSISTENT THAT SOMETHING BE DONE AT ONCE.

FURTHER DIFFICULTIES IN OFFERING CRITERIA FOR CURE OR FOR THE EVALUATION OF A DRUG ARE CONCERNED WITH THE EXISTING UNCERTAINTY OF THE ACTUAL ORIGIN OF THE DISEASE AND THE PROBABLE MULTIPLE AND VARIED CHANCES FOR REINFECTION. WHILE SOME PATIENTS IMPROVE WITH ANY TYPE OF SIMPLE TREATMENT AND OTHERS BECOME ASYMPTOMATIC SPONTANEOUSLY, STILL OTHERS, ESPECIALLY SOME OF THE RECALCITRANT ONES, IMPROVE WHEN THE NUMBER OF AND THOROUGHNESS OF APPLICATION OF TREATMENTS ARE DECREASED.

A REVIEW OF MANY REPORTS IN MEDICAL LITERATURE REVEALS A COMMON FAILING METHOD OF TREATMENT ARE DESCRIBED BUT WITH VERY INCOMPLETE DATA ON NUMBER OF PATIENTS, NUMBER OF CURES (COMPLETE), RECURRENTS, NUMBER AND LENGTH OF TREATMENT. IN RELATIVELY FEW CASES ARE COMPARISONS OF DIFFERENT METHODS MADE OR CONTROLS EMPLOYED. THE NUMBER OF PAPERS THAT DO NOT REPORT ANY FAILURES IS SURPRISING. YET REGARDLESS OF THESE FACTS MANY CLAIMS ARE MADE FOR THE THERAPEUTIC EFFICACY OF INNUMERABLE AGENTS. TO EMPHASIZE THE INADEQUACIES THAT MAY EXIST THE DIFFICULTY OF SETTING UP SATISFACTORY EVALUATION CRITERIA WITH OUR PRESENT KNOWLEDGE, AND TO SETTLE SOME OF THE UNCERTAINTY WHICH IS APPARENT IN MANY LETTERS OF INQUIRY ARRIVING AT HEADQUARTERS THE COUNCIL ON PHARMACY AND CHEMISTRY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT AND AT THE SAME TIME EXPRESSES ITS APPRECIATION OF ASSISTANCE IN PREPARING THE REPORT FROM DR. GEORGE V. S. SMITH, PROFESSOR OF GYNECOLOGY AT HARVARD UNIVERSITY.

AUSTIN E. SMITH, M.D., Secretary

THE STATUS OF TREATMENT OF
VAGINITIS ASSOCIATED WITH
TRICHOMONAS VAGINALIS

Hesseltine¹ has pointed out that investigators in the United States have made the major contributions of the past two decades to the subject of vaginal trichomoniasis. This evaluation of the status of treatment, therefore, is based practically entirely on the American literature, namely articles from the start of 1930 through 1942 and textbooks by American gynecologists although foreign articles appearing during the same period have also been consulted.

PATHOGENICITY OF TRICHOMONAS VAGINALIS

Trussell and Plass² were the first to induce the disease with a bacteria free culture of the organism. Five of 9 uninfected women who were successfully inoculated developed the clinical picture of Trichomonas vaginalis vaginitis. The positive inoculations could not be related to the bacterial flora or the degree of acidity present in the vaginas of these women. Wolters and Hesseltine¹ confirmed this accomplishment, though they could not obtain so high a percentage of positive implantations. The fact that inoculations were not uniformly successful and that clinical manifestations of infection did not ensue in every patient harboring the implanted protozoa indicates that unknown conditions influence the pathogenicity of the flagellates. In keeping with this deduction is the absence of symptoms in 47 to 87 per cent of patients with vaginal trichomoniasis.³ The situation as regards the pathogenicity of T vaginalis is summarized by Trussell and Plass: "T vaginalis can produce abnormal discharge and vaginal irritation in women. These results should not be interpreted to mean that the altered bacterial flora commonly associated with the protozoa in clinical trichomonas vaginitis does not influence the extent of the

reaction, for such organisms might logically be assumed to aggravate the inflammatory process. Furthermore, it is reasonable to assume that certain vaginitides are bacterial in origin with the protozoan parasites of secondary importance." Thus in any given case of vaginitis in which the flagellates are present one may not yet be certain whether or not T vaginalis is the basic pathogenic factor.

SOURCE OF INFECTION WITH T VAGINALIS

The exact origin of contamination in most cases is unknown.⁴ That the mouth and rectum may be sources of infection and recurrence is accepted by a number of authors, and Karnaky⁵ believed that Trichomonas buccalis and Trichomonas intestinalis changed to T vaginalis when transplanted to the vagina. Bland and Rakoff⁶ concluded that the rectum and the mouth were "improbable sources of vaginal infestation," and later attempts⁷ to infect human vaginas with T intestinalis (Trichomonas hominis) supported their conclusion. Only 2 cases of apparent T vaginalis proctitis have been reported.⁸ If T vaginalis invades the rectum and thereby makes the feces a possible vector, one would expect more comment on rectal symptoms in the literature.

The lower urinary tract is considered to be one source of recurrence,⁹ and the male can infrequently be the cause of infection or reinfection.¹ The glands of Skene and Bartholin may also harbor the parasites and be foci of recurrence.¹⁰

Despite the gaps in knowledge there is general agreement that vaginitis associated with T vaginalis is a clinical entity.

Hesseltine,¹¹ in a 1938 report on the status of therapy, urged that before any new procedures or preparations should be recommended, adequate and satisfactory controls should be established as regards both the disease itself and also the vehicles of the various medicaments. Since then five more substances have been added to the list of recommended agents. It is easy to understand why no significant control observations have been made. If patients are sufficiently bothered they want something done, if their symptoms are not disturbing they are not likely to be cooperative in undergoing repeated investigative manipulations. To have scientific data on the course of the disease, both mild and severe in a series of untreated cases would indeed be most desirable.

That T vaginalis vaginitis as a clinical entity may, through the working of unknown factors, be limited sooner or later in the great majority of patients is suggested by the large percentage harboring the organism without symptoms (v s), by the easy curability of a large percentage of those with symptoms (v i) and by the paucity in the literature of information concerning failures and recurrences after a three to twenty-four month period of follow-up after treatment. A disturbing amount of persistence or recurrence after two years seemingly would have excited more detailed study and comment than indicated by the following. Kahn's¹² 47 patients had had symptoms six months to four years despite various treatments. Allen, Jensen and Wood¹³ stated that 20 per cent of their patients had

⁴ Curtis A. H. *Obstetrics and Gynecology*. Philadelphia: W. B. Saunders Company, 1933, vol. III, p. 428. De Lee J. B. and Greenhill, J. P. *Year Book of Obstetrics and Gynecology* 1940, p. 467. Davis¹⁴ Allen, Jensen and Wood¹⁵.

⁵ Karnaky K. J. A New and Improved Method of Treatment for Trichomonas Vaginalis and Other Pathological Conditions of the Vagina, M. Rec. & Annals May 1936. Trichomonas Vaginalis and Monilia Albicans as Causes of Leukorrhea¹⁶.

⁶ Bland P. B. and Rakoff A. E. The Incidence of Trichomonads in the Vagina, Mouth and Rectum. Evidence that Vaginal Trichomonads Do Not Originate in the Mouth or Intestine. J. A. M. A. 108: 2013 (June 12) 1937.

⁷ Kessel J. F. and Gafford J. A., Jr. Observations on the Pathology of Trichomonas Vaginitis and on Vaginal Implants with Trichomonas Vaginalis and Trichomonas Intestinalis. Am. J. Obst. & Gynec. 39: 1005 (June) 1940. Fco. L. G. Rakoff A. E. and Stabler R. M. Inoculations of Intestinal and Vaginal Trichomonads into the Human Vagina. *ibid.* 42: 276 (Sept.) 1941.

⁸ Peterson¹⁷, Zener¹⁸.

⁹ Hesseltine¹, Allen, Jensen and Wood¹⁹.

¹⁰ Shelanski H. H. and Savitz S. P. Bartholinitis and Skeneitis Due to Trichomonas Vaginalis. Am. J. Obst. & Gynec. 37: 294 (Feb.) 1939.

¹¹ Hesseltine H. C. Vaginal Trichomoniasis Therapy. Am. J. Obst. & Gynec. 35: 1085 (June) 1938.

¹² Kahn I. W. Treatment of Trichomonas Vaginalis Vaginitis with Sodium Perborate and Quinine. Am. J. Obst. & Gynec. 28: 511 (Oct.) 1934.

¹³ Allen E. D., Jensen L. B. and Wood I. H. Clinical and Bacteriologic Observations in Trichomonas Vaginitis. Am. J. Obst. & Gynec. 30: 565 (Oct.) 1935.

¹ Hesseltine H. C. Vulvar and Vaginal Mycosis and Trichomoniasis. Am. J. Obst. & Gynec. 40: 641 (Oct.) 1940.

² Trussell R. E. and Plass E. D. The Pathogenicity and Physiology of a Pure Culture of Trichomonas Vaginalis. Am. J. Obst. & Gynec. 40: 883 (Nov.) 1940.

³ Cornell E. L., Goodman L. J. and Matthews M. M. The Culture Incidence and Treatment of Trichomonas Vaginalis. Am. J. Obst. & Gynec. 22: 360 (Sept.) 1931. Angelucci²⁰, Peterson²¹.

"variable recurrent periods of infestation, some of them extending over a period of years" Mintz¹⁴ wrote that the duration of the disease varied from one week to twelve years. One of Drabkin's¹⁵ patients had been under treatment three and one-half years. The disease "may exist from months and even years without a change in its course"¹⁶

IS VAGINAL TRICHOMONIASIS POTENTIALLY DANGEROUS?

Bland, Goldstein and Wenrich¹⁷ quoted evidence from the German literature and presented their own that *T. vaginalis* vaginitis increases puerperal morbidity, the criterion being a fever of 100.4 F or higher. According to Mintz,¹⁴ the organism "has been proved to be the causative factor in a few cases of puerperal morbidity." Szendi,¹⁸ on the other hand, stated that the protozoon plays no role in the production of puerperal morbidity, and Moench¹⁹ sketched the course of a patient with the "worst infestation with this protozoon" he had ever seen. The puerperium was normal and no organisms were demonstrable three months later. She had received no treatment.

Five of Ruble's²⁰ patients had mild pelvic inflammation while being treated, and operation showed "that type of inflammatory reaction of the pelvis which one would expect to find following gonorrheal salpingitis."

Pelvic cellulitis secondary to trichomonas vaginitis is more common than generally supposed.¹³ According to Hees,²¹ *T. vaginalis* has been found by culture and smear in the endometrium, chronically inflamed tubes, ovarian cysts, the peritoneum, the blood stream of patients and the viscera of the fetus, and pelvic abscesses caused by the flagellate are not rare.

Karnaky²² discussed the presence of the organism before and after operation but made no mention of surgical morbidity, from which it may be inferred that he had none for which he held the parasite responsible. Textbooks by well known gynecologists do not lay any emphasis on possible grave complications from the flagellate. If *T. vaginalis* had serious potentialities as regards pelvic inflammation, it seems that by now the evidence would be more definite than indicated by the foregoing available information.

TREATMENT

Opinion is practically unanimous that there is no specific or ideal therapy, that some patients are more difficult to cure than others and that treatment should be continued through the period of menstruation and as long as deemed necessary in pregnancy. Davis's²³ "results with all methods of treatment suggest that one may expect about 20 per cent of failures if results are judged on the basis of permanent absence of the flagellates from the vaginal secretion." According to Curtis,²⁴ "it is estimated that 85 per cent of patients obtain a clinical cure, in reality an arrest of their infection, irrespective of the treatment employed."

In the literature reviewed, the length of treatment varied from two weeks to one year, the criterion of cure was freedom from symptoms and the parasite for periods varying from two to twenty-four months after cessation of therapy and ninety substances, including vehicles, used in therapy were named, as well as acid producing bacteria, streptococcus bouillon filtrates, autogenous bacterial preparations and heat. Most methods

employed two or more, up to seven, substances, not including soap and water, in combination or sequence. In the following review of reports the figures in parentheses represent the number of patients treated. Local treatment with one substance, sodium chloride (56),²⁵ quinine sulfate (39),²⁶ sodium bicarbonate (27),²⁶ picric acid (35),²⁶ and iodine (29),²⁷ was carried out in five series of cases and the results were approximately similar, viz 80 to 85 per cent of three to eight month cures, except with iodine, which gave 53 per cent.

Local treatment with the substances sodium 3-N-methanalsulfoxylic acid-amino-4-hydroxy phenylarsonic acid (Aldarsone) in kaolin (100),²⁸ iodochlorhydroxy-quinoline (Vioform) in glycerin (15),²⁹ *p*-carbamino phenyl arsonic acid (Carbarsone) with sodium bicarbonate (210)³⁰ and Vioform with magnesium trisilicate (140)³¹ yielded 91 to 98 per cent of two to nine month cures.

Treatments with multiple substances involved the local use of the following various ways: picric acid, and acetylaminohydroxyphenyl arsonic acid (acetarsone) in kaolin (150),³² Vioform in glycerin and lactic acid (500),³⁰ Vioform in ointment and sodium chloride (106),³³ sodium perborate and quinine sulfate (alone or in starch or zinc oxide) (47),¹² cocoa butter with oxyquinoline sulfate, picric acid and menthol, lactic acid and potassium permanganate (275),¹⁴ lactic acid, lactose, citric acid and sodium bicarbonate (35),³⁴ Carbarsone, sodium bicarbonate, glycerogelatin base, vinegar or lactic acid (21),¹⁵ acetarsone, dextrose, boric acid, starch, sodium bicarbonate, tartaric acid and sodium perborate (39),³⁵ di-iodohydroxy-quinoline (Diodoquin) with dextrose, lactose and boric acid alone (100),³⁶ with vinegar (4,400)³⁷ or with lactic acid (27),³⁴ hydrogen peroxide, and silver picrate in kaolin and in boroglycerin (20),³⁸ (15),³⁹ silver picrate in kaolin and in boroglycerin and gelatin (695),³⁰ (1,646),⁴⁰ silver picrate in kaolin and in cocoa butter (100),⁴¹ (25),⁴² skim milk, *Lactobacillus bulgaricus*, dextrose, lactose, liquid petrolatum, starch and vinegar (50),⁴³ and a condensation product of *m*-cresol sulfonic acid and formaldehyde, called negatol in powder and suppository form, and vinegar (87).⁴⁴ The percentage of two to twenty-four month cures by these medicaments and the manner of their application ranged from 88 to 100 in all but 2⁴⁵ of the series of cases.

Known and unknown variables that must be operative in vaginitis include the many conceivable ways for the vagina to

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29 Sanderlin, J. H. *Trichomonas Vaginalis Vaginitis*, Tri State M. J. 8:1673 (July) 1936.

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44 Filler, William, Drezner, Nathan and Adamo, T. H. *Treatment of Trichomonas Vaginalis Vaginitis with Negatol (Negatol)*, Am J Obst. & Gynec. 43:1057 (June) 1942.

45 Meigs²⁵ Filler, Drezner and Adamo.⁴⁴

become contaminated with many different organisms as well as *T. vaginalis*, the condition of the cervix and vestibular glands, the metabolic status of the pelvic organs and of the patient and the mental reactions of patients to the pelvic situation. These and variations in the technique of treatment and in the giving and carrying out of instructions (lack of cooperation is mentioned a number of times in the literature) all affect the outcome, and some of these variables must have accounted for the following inconsistencies: "Results of treatment with rectarsone and stovarsol (equal parts of iodoform and sodium bicarbonate with 12.5 per cent of rectarsone) have been disappointing."²³ "Out of the welter of myriad treatments we have found that the simple placement of about 10 cc of dry stovarsol powder in the vault of the vagina every day for six treatments is infinitely superior."⁴⁰ "Control methods were used, and it was found that apparently sodium bicarbonate by altering the pH of the vaginal secretion seemed to work as well as stovarsol, so it was concluded that the latter was not necessary."⁴¹ Bland and Rikoff⁴² and Meigs⁴³ had less than average good results, whereas Percz, Arenas and Blanchard⁴⁴ had a high percentage of satisfactory results with acetarsone, there being considerable variation in technique and the use of other substances.

In this connection a number of writers emphasize the importance of general health measures, De Lee⁴⁵ had 3 patients cured for five years after medication with thyroid extract orally, and Moench⁴⁶ had a patient whose recalcitrant *T. vaginalis* vaginitis disappeared following operation for toxic goiter.

Consideration of the foregoing adds weight to the likelihood that vaginitis like other local infections may be a limited process, cure being hastened by attention to details of local and general treatment, the choice of remedies and technics of application being matters of individual preference.

TOXICITY OF MATERIALS USED IN TREATMENT.

Gellhorn⁴⁰ observed no local or systemic toxic effects from the vaginal insufflation of stovarsol. One case of drug rash was reported by Campbell⁵⁰ following the vaginal application of tablets of stovarsol, and Zener³¹ stated that Dr. G. C. Schaeffler had had 3 cases of intolerance to a preparation of acetarsone, boric acid and glycolized carbohydrates. No reactions were encountered by Peterson³⁰ in 210 patients or by Drabkin¹⁵ in 21 patients using carbarsone locally. Zener³¹ warned that silver picrate is dangerous in an alkaline medium and reported 2 cases of moderately intense local reaction therefrom, as did Buxton and Shelanski.⁴¹ Kahn¹² attributed two minor complications to quinine sulfate, Angelucci²⁰ had no trouble with quinine sulfate but 2 of her patients reacted to picric acid. Oxyquinoline sulfate produced no toxic reactions in Mintz's¹⁴ series. Capsules containing 10 Gm of sodium perborate occasionally caused chemical burns in the vagina,⁵¹ as did iodine in 2 instances.²⁷ It appears that the drugs covered in this review, as administered, were harmless in the vast majority of instances, for of 8,989 patients treated only 1 experienced a drug rash and only 13 had local effects attributed to medication.

EVALUATION

The most significant aspect of the status of therapy of *Trichomonas vaginalis* vaginitis is that such good results ensue from so many substances and variations in the methods of their use and that a small percentage of failures persists in spite of similar treatment. To elucidate these failures is the chief problem. In the absence of control data, the best test of a therapy as Hesselstine¹¹ stated, would be in this small group, but perhaps these patients need something more than local treatment. Furthermore are these cases failures of treatment to sterilize foci of organisms that cause recurrence or is the persistence of the disease due to repeated contamination? The

question cannot be answered since both sources of contamination and foci of recurrence are obscure in nearly every patient. It is thus impossible to define complete cures except in terms of years of follow-up examinations and, until more knowledge is acquired, no one therapeutic measure can be clearly proved superior. The status of treatment then remains a matter of personal experience with and preference for one or more of a large number of preparations.

In view of the fact that *T. vaginalis* cannot be proved pathogenic in every case of vaginitis in which it is found, that unknown local and general factors are operative and that the disease is not likely to be fraught with serious possibilities and may even disappear without treatment, the present aim should be not for new medicaments but for further information, especially concerning failures. In the meanwhile, thoroughness and persistence with the simplest and least messy procedures and a general health program appear to be the therapeutic objectives.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

TETANUS ANTITOXIN (See New and Nonofficial Remedies 1943, p. 526)

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tetanus Antitoxin, Pepsin Digestion Refined Vials containing 1,500 units and syringes containing 1,500 units and 10,000 units respectively. The antitoxin differs from tetanus antitoxin-U. S. P. chiefly in the method of refinement, which is based essentially on a controlled method of selective digestion of the proteins of the immune horse blood with pepsin.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 590)

The following dosage form has been accepted:

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO
Tablets Thiamine Hydrochloride 10 mg

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1943, p. 403)

The following additional dosage forms have been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Perles Diethylstilbestrol (in oil) 0.25 mg

JOHN WILEY AND BROTHER, INC., PHILADELPHIA

Tablets Diethylstilbestrol 0.25 mg

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 255)

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Capsules Ephedrine Hydrochloride 24 mg ($\frac{3}{8}$ grain)

PENTOBARBITAL SODIUM (See New and Nonofficial Remedies, 1943, p. 495)

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL COMPANY, NEW YORK

Capsules Pentobarbital Sodium 0.1 Gm

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1943, p. 356)

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL COMPANY, NEW YORK

Tablets Aminophylline 0.1 Gm and 0.195 Gm

THE LAKESIDE LABORATORIES, INC., MILWAUKEE

Tablets Aminophyllin 0.2 Gm, enteric coated

POSTERIOR PITUITARY INJECTION (See New and Nonofficial Remedies 1943, p. 424)

The following dosage form has been accepted:

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO

Posterior Pituitary Injection 10 cc rubber capped vials.

⁴⁶ Cook, W. R. *Essentials of Gynecology*. Philadelphia: Montreal and London: G. B. Lippincott Company, 1943, p. 263.

⁴⁷ Adair, F. L. Discussion on Allen, Jensen and Wood.¹² *Am. J. Obst. & Gynec.* 30: 737 (Oct.) 1935.

⁴⁸ De Lee, J. B. Discussion on Allen, Jensen and Wood.¹² *Am. J. Obst. & Gynec.* 30: 737 (Oct.) 1935.

⁴⁹ Gellhorn, George. The Treatment of *Trichomonas Vaginitis* with Acetarsone (Stovarsol). *J. A. M. A.* 100: 1765 (June 3) 1933.

⁵⁰ Campbell, C. G. H. Arsenical Intolerance and the Treatment of *Trichomonas Vaginalis* Infection. *Lancet* 2: 688 (Sept. 18) 1937.

⁵¹ Smith, E. C. Sodium Perborate Therapy in *Trichomonas Vaginalis* Vaginitis. *New Orleans M. & S. J.* 94: 37 (July) 1941.

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SATURDAY, OCTOBER 23, 1943

DOES MEDICAL EDUCATION NEED TO BE REVOLUTIONIZED?

THE WAGNER-MURRAY-DINGELL BILL II

Is the rate of progress in medical education in America so slow and the stage which it has attained so inferior and the hope of further progress so hopeless as to call for a revolution? Those who have observed this progress and present attainments say emphatically "No." At the beginning of this century the American Medical Association first collected and published statistics on the medical school situation in this country.¹ In 1904 it created a permanent Council on Medical Education and began a series of annual conferences. In 1909, at the time of the fifth annual conference, only 17 schools required two or more years of college work for admission. Many medical schools were private enterprises depending on tuition for support. A large number made the payment of such tuition almost the only standards of admission, and often of graduation. In 1906 there were 162 medical colleges in the United States, many of them little more than "diploma mills."

The Council on Medical Education and Hospitals was without legal power, nor was it connected with any political or governmental agency. It achieved its results by advising and cooperating with medical schools, following thorough, impartial examination of curriculums, equipment, faculty and other requisites or essentials for teaching. Yet by 1943 the number of schools had been reduced to 76, whose standards of admission and whose quality of education were such as to place them among the foremost medical educational institutions in the world. This is still a larger number of medical schools than exists in any other two nations combined, they are graduating as many physicians as did the much larger number of inferior schools existing at the beginning of the century.

Medical education is the necessary ingredient for quality in medical practice. Only through improved

medical education comes the possibility of better and better service to the public, carrying with it reduction in morbidity and mortality and extension of the life period.

There has been progress in medical education in other countries. In no other country, however, and certainly in none with compulsory sickness insurance, has the rate of advance been so rapid or the standards reached so high as in the United States. At the beginning of the century the superiority of European medical schools caused American physicians to flock to them to complete their education. Today the tide has been reversed. Physicians throughout the world seek American medical schools as the climax of their educational career. This period during which America outstripped the former world leaders in medical education was those years in which the physicians of the lagging nations were being forced into systems of compulsory sickness insurance.

Compulsory sickness insurance in Germany put "panel doctors," or "kassenärzte," in a class apart from private practitioners. Even the advocates of sickness insurance will scarcely claim that the titles applied to insurance physicians carry any certification of professional superiority. In other countries insurance practitioners do not have opportunities or inducements such as have led to extensive postgraduate work among general practitioners in America.

The Wagner-Murray-Dingell Bill in section 1111 proposes an entirely new method, revolutionary in almost every point, for the support and control of American medical education. The Surgeon General of the United States Public Health Service is to make "grants-in-aid" to such institutions as he thinks "show promise of making valuable contributions to the education or training of persons useful to or needed in the furnishing of medical, hospital, disability, rehabilitation, and related benefits provided under this Act or to human knowledge with respect to the cause, prevention, mitigation, or methods of diagnosis and treatment of disease and disability." Will the Surgeon General, whoever he may be, utilize the voluntary machinery set up by the medical profession and the medical schools to determine which institutions "show promise"? This bill would destroy the voluntary organization now so effectively performing this task.

Bureaucratic control of medical education will inevitably destroy the standards of excellence that now characterize the medical schools of America. Such a revolution in control could not well avoid disrupting the methods of selecting students which is essential to the preservation of the high personal qualifications and ethical integrity of the medical profession. Only a miracle could avoid temporary or permanent deterioration, if not complete destruction, of educational standards.

¹ Final Report of the Commission on Medical Education, 1932, pp 10-11.

TOXIC FACTORS IN SHOCK

Until recently a substance had not been isolated from animal tissues which could be held responsible for the shock syndrome. The search for the hypothetical toxic factors in tissue has been renewed in an effort to understand the mechanisms which underlie the production of symptoms in traumatic injuries.

In 1941 Bywaters and his colleagues¹ reported myohemoglobin in the urine of injured patients. These workers suggested that this pigment may be only an indicator of muscle damage and other substances released from muscle at the same time may be responsible for the structural and functional changes in the "crush kidney."

Green,² who studied the experimental shock produced by "hind-limb ischemia," concluded that a shock producing factor is released from asphyxiated muscle. In the first attempts to obtain from normal or asphyxiated muscles an extract which on intramuscular injection would reproduce the syndrome produced by "hind-limb ischemia" the possibility developed that the hypothetical shock factor is labile and rapidly destroyed in the dying muscle. A crude saline extract obtained from muscle immediately after its removal proved to be consistently more toxic than any previously used. The factors which produce a shocklike state after intramuscular, intraperitoneal or subcutaneous injection were provisionally called muscle shock factors.

Different species of animals treated with the muscle extracts showed the cardinal features of profound depression of all vital activities with retention of consciousness almost until death, low blood volume, variable hemoconcentration, irregular fall in blood pressure, lowering of temperature, depression of renal function with anuria, nitrogen retention, albuminuria, microscopic hematuria and granular cylindruria. The administration of myohemoglobin acts synergistically with the muscle shock factors, particularly in the production of renal damage. Necropsy reveals evidences only of generalized increase in capillary permeability. The whole syndrome is remarkably similar to that seen in shock after "hind-limb ischemia." Additional similarity is shown in the development of some degree of tolerance to repeated injections of muscle shock factors as well as to the effects of repeated "hind-limb ischemia."

The experiments provide definite evidence that toxic shock producing factors were present in both normal and asphyxiated muscles. Apparently ischemia acts only by releasing normal muscle constituents into the general circulation, where they act as shock producing factors. The isolation of these factors was the next logical step. Chemical fractionation by Bielschowsky and Green³ of saline extract of acetone dried muscle

yielded a substance which analysis showed to be pure barium adenosine triphosphate. Preliminary tests with the sodium salt of this compound indicated that it possessed the full depressor and lethal potencies of the "muscle shock factors." Whether salts of adenosine triphosphate and myohemoglobin are the only toxic factors released from injured muscle is not known. It seems, however, that adenosine triphosphate alone may be responsible for the production of all the clinical features of shock. The mode of action of the substance is not understood. It seems unlikely, however, that the known metabolic actions of this compound are responsible for its shock producing properties. Acid hydrolysis of adenosine triphosphate destroying its adenosine radical did not diminish its shock producing properties. The most probable hypothesis would be that the chemical acts through the pyrophosphate part of the molecule.

Obviously these results are important in the understanding of traumatic shock in man, however, confirmation of the original work and further experimental and clinical studies are necessary before all features of traumatic shock can be explained by this mechanism.

Current Comment

DECLINE IN MATERNAL MORTALITY

Maternal mortality in the United States has decreased in the last decade by more than two thirds. The decline, according to the Statistical Bulletin of the Metropolitan Life Insurance Company for August, has been from between 6 and 7 deaths per thousand live births a year to less than 2 per thousand, despite the sharply increased birth rate and the shortage of doctors and nurses. The improvement appears to be continuous, and further reduction is to be expected. The high maternal mortality prior to 1930 was due principally to inadequate care during pregnancy, confinement and the postpartum period. The gratifying results in the reduction of the loss of life of mothers and babies were accomplished primarily by the concerted effort of the medical profession and hospital managements. The medical schools have placed greater emphasis on obstetrics and have extended their postgraduate studies in this field. The hospitals have contributed much by improving their service and particularly by segregating the obstetric wards from the other services. The federal and state operated maternity and child hygiene bureaus were instrumental in arousing the interest of communities to safeguard the lives of mothers and babies. They have provided large numbers of public health nurses to render service in the homes of pregnant women and to educate them regarding approved practices of antepartum care and confinement. Various local maternity associations and many private agencies contributed much along the same lines. The sulfonamide drugs have reduced by more than a half the mortality caused by the dreaded puerperal sepsis. The mortality from this cause prior

1 Bywaters E. G. L., Delory G. E., Rumington Claude and Smiles John. Myohemoglobin in the Urine of Air Raid Casualties with Crush Injury. *Biochem. J.* 35: 1164 (Nov.) 1941.

2 Green H. N. Shock Producing Factor(s) From Striated Muscle. I. Isolation and Biological Properties. *Lancet* 2: 147 (Aug. 7) 1943.

3 Bielschowsky Marian and Green, H. N. II. Fractionation Chemical Properties and Effective Doses. *Lancet* 2: 153 (Aug. 7) 1943.

to 1935 could not be reduced to less than 24 per thousand live births. Currently the mortality rate from this cause is reported to be less than 1 per thousand. Further progress in the reduction of the loss of life of mothers and babies, it is pointed out, can be accomplished by concentrated efforts in those areas where maternal deaths are still too frequent, namely the South and Southwest. The high maternal death rate in these areas is contributed largely by the deaths among Negro women, less than half of whom are attended in their confinement by a physician.

INTERRELATIONSHIP OF ASCORBIC ACID AND THIAMINE

Four years ago Sure¹ demonstrated that rats are able to synthesize adequate amounts of ascorbic acid. The ascorbic acid content of their tissues is maintained at a normal level in spite of complete lack of ascorbic acid in the diet. This synthesis was apparently dependent on an adequate intake of certain other vitamins, prominent among them being thiamine and riboflavin. As much as 75 per cent reduction in the normal tissue concentration of ascorbic acid results from an inadequate intake of thiamine in this animal species. Dogs also normally synthesize their own vitamin C, though the relation of this synthesis to other vitamins has not yet been determined with dogs. In the course of studies of shock, Govier and his associates² of the Department of Pharmacology, Vanderbilt University School of Medicine, placed two groups of dogs on thiamine deficient diets. One group was given the thiamine deficiency diet suggested by Goodsell³. This contains casein, sucrose, cottonseed oil, agar and cod liver oil, with autoclaved brewers' yeast to supply the other B complex vitamins. The second group of dogs was fed the thiamine deficiency diet suggested by Schaefer⁴. Instead of autoclaved brewers' yeast, the dogs on this diet were given adequate amounts of riboflavin, nicotinic acid, pantothenic acid, pyridoxine and choline by stomach tube. Many of the animals on each diet developed necrotic erosions of the buccal tissues. These began around the teeth and often became so severe as to extend almost entirely around the lower jaw. On the assumption that these necroses were only indirectly due to inadequate intake of thiamine, all dogs on the deficiency diets were given 10 mg of ascorbic acid twice weekly by stomach tube. There was a prompt healing of the oral lesions in all animals thus treated. Buccal lesions did not appear in new groups of dogs placed on thiamine deficiency diets plus ascorbic acid. The fact that ascorbic acid will prevent or cure certain secondary manifestations of thiamine deficiency in dogs is a striking extension of the known facts of vitamin interrelationships to a second animal species with suggestive bearing on problems of human nutrition.

¹ Sure, Barnett, Theis, R. M., and Harrison, R. T. Vitamin Interrelationships, *J. Biol. Chem.* **129**: 245 (July) 1939.

² Govier, William M., and Greig, Margaret E. Prevention of Oral Lesions in Bi-Avitaminic Dogs, *Science* **98**: 216 (Sept. 3) 1943.

³ Goodsell, Julia, E. Weight Changes in the Cortex and the Medulla of the Adrenal Gland of the Dog in Acute Vitamin B₁ Deficiency, *Am. J. Physiol.* **134**: 119 (Aug.) 1941.

⁴ Schaefer, A. E., McKibben, J. M., and Elvehjem, C. A. Nicotinic Acid Deficiency Studies in Dogs, *J. Biol. Chem.* **144**: 679 (Aug.) 1942.

SMALLPOX VACCINATION A REMINDER

Recently a death from tetanus followed smallpox vaccination. A careful investigation of the manufacturing records of the lot of vaccine involved and subsequent laboratory tests on this lot have failed to give any evidence that the vaccine was at fault. However, an investigation of the circumstances surrounding the vaccination and subsequent management of the case revealed that two commercially made adhesive gauze bandages containing sulfathiazole had been applied over the site of vaccination and left in place. The first symptoms of tetanus appeared on the sixteenth day following vaccination, and death rapidly ensued. This history has its counterpart in each of the 116 cases of tetanus complicating vaccination investigated by Armstrong¹ in that a dressing was attached to the arm over the vaccination. Celluloid shields and bunion pads, fortunately, have almost disappeared as vaccination dressings. It remains for the physician to renounce all dressings attached to the vaccinated arm to rid a beneficent preventive procedure of this infrequent and preventable complication. The principles of good practice in smallpox vaccination have been clearly stated by Leake². These embody the use of a properly refrigerated, potent vaccine, a small area of superficial insertion of the virus just below the deltoid muscle, the avoidance of fixed dressings and careful observation of the progress of the lesion in order to determine the immunity status of the patient. In days when ready made bandages are in every medicine cabinet there is a tendency to apply dressings to all abrasions. Admirable as such practice may be for some types of lesions, it is to be severely condemned when the fixed dressing is applied to a vaccination site. Dressings of this character tend to retain heat and moisture, thus favoring the rupture of the vesicle and the formation and retention of pus and necrotic material, ideal for anaerobic growth. Experience has shown that without such a circumstance the tetanus organism will not multiply in a vaccination wound. There is no objection to pinning a suitable dressing to the under side of a loosely fitting sleeve over the vaccinated area, particularly if the clothing is soiled.

HEALTH OF ARMED FORCES

Elsewhere in this issue (page 487) appears a detailed report released by the Office of War Information concerning the health of the armed forces of the United States. Every physician should take the time to read this report carefully so that he may participate in the pride and the glory of this magnificent record of accomplishment. Epidemic disease has been kept under control, the great menaces of previous wars have been prevented, the treatment of the wounded has been superb. And at the same time the civilian population of the United States, depleted by almost one third of the active physicians of the country, has had the lowest sickness and death rates in the history of the nation.

¹ Armstrong, Charles. The Role of the Vaccination Dressing in the Production of Postvaccinal Tetanus. *Pub. Health Rep.* **41**: 1871 (Aug. 2) 1929.

² Leake, J. P. Questions and Answers on Smallpox and Vaccination, Reprint 1137 from *Public Health Reports*, 1939.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

HEALTH OF THE ARMED SERVICES

The following release is a slight condensation of a report prepared by the Office of War Information

There have been flareups of diseases in the last eighteen months, but only cerebrospinal meningitis reached epidemic proportions and its death toll was low

The situation in units overseas is occasionally even better. In those diseases for which vaccines have been developed, it is excellent. However, malaria and dysenteries present serious problems in land combat conditions, and the Navy reported some trouble with infectious mononucleosis and with filariasis, a parasitic inflammation of the glands which can produce elephantiasis.

Although specific problems vary, what is true of the two major branches of the armed service is in general true also of the Marine Corps, the Coast Guard, and of the women's services—the Wacs, the Waves and the Spars.

Here are some highlights of service health:

1 Disease incidence was reported in 1942 lower than the preceding year and continues good in 1943. An average of a little more than 3 per cent of the Army personnel in this country was off duty because of sickness or nonbattle injuries at any given time during 1942; abroad the rate was slightly lower, even including battle casualties. The Navy's corresponding "noneffective" rate stood at approximately 2 per cent in 1942, also a record low.

2 The Army and Navy make a good report on incidence of venereal diseases among the men. Despite a policy of accepting inductees with uncomplicated cases because of the high percentage of cures possible with new treatments, the Army in the continental United States this year up to August 1 reported an average of some 40 treated annually per thousand men, and the Navy an average 33 men per thousand. If those infected before induction are eliminated from the calculation, the Army's figures stand at an all time low of 25 treated per thousand men, the average for 1943 up to August 1. In this class of diseases there is a wide divergence between the major branches and the women's services. Fewer than one in ten thousand women in the uniformed services has been admitted to treatment for venereal diseases. Thanks to new types of treatments, the disability rate for these ailments is low. Of some 1,100 Wacs released for disability in a ten month period, only one was discharged because of syphilis and only one because of gonorrhea.

3 Cerebrospinal fever (meningococcic meningitis), which threatened to reach epidemic proportions in the early months of 1943, was controlled promptly in service posts through the use of sulfonamides to treat those infected and also in preventive dosages for those who might have had contact with the stricken man. As a consequence the peak rate of the disease lasted only a brief while, and the epidemic fell off quickly. The whole pattern of the epidemic reflected the greater controls possible in military establishments as opposed to the civilian community as a whole. Deaths which in previous epidemics ran from 30 to 40 per cent of those contracting the disease were held to three to five deaths out of every hundred cases.

4 The armed forces use preventive vaccines against seven key diseases: typhoid, smallpox, tetanus, typhus, yellow fever, cholera and plague. In this war there have been no cases of yellow fever in either the Army or the Navy and only a scattering of reports among the other diseases including 1 Navy case of plague. Deaths among this group of diseases were negligible. The Army reported about 60 cases of typhoid but very few deaths in 1942, the Navy 8 cases and one death in 1942.

5 Dysenteries and diarrhea, including food poisoning, is the Army's second greatest disease threat in number of cases among overseas troops. The Army reports about 7 cases per thousand men in continental United States for 1942. In combat zones abroad admissions to treatment averaged about 30 men per thousand annually in 1942 and about 50 in 1943, a good record in contrast to other wars. The higher rate for 1943 was due mainly to the larger concentrations of troops in areas where these diseases have a high incidence. The sulfonamides help effect prompt cures of these ailments also.

6 Malaria is a leading disease enemy overseas in land operations in malarious areas. Rates of infection in particular theaters are held secret for security reasons, but strong preventive action is being taken and the Army and Navy believe our record is superior to that of enemy forces. There are adequate supplies of essential drugs.

CEREBROSPINAL MENINGITIS

In the Army camps the epidemic of cerebrospinal meningitis reached its highest rate in March 1943, when its potential was about 3 per thousand men annually. It then fell off to a low level. Currently the rate is about one-tenth that of March in the entire army in continental United States. The Navy's rate for the week ended August 28 was 0.01 per thousand (1 in 100,000). The calculation used by the armed services "per thousand men per year" states the number of men per thousand who in the course of a year may be expected to be hospitalized for a given sickness if the incidence rate continues at the level noted for any special segment of a year.

In civilian records both the rise and the fall of the cerebrospinal meningitis epidemic is much more gradual. It struck a high level in January of this year, rose to a crest in the week of April 17 and held close to that point for a month. In contrast to the sharp reduction of the number of cases in military establishments, the civilian epidemic decreased very slowly. In July and August, when the disease apparently was under control in armed camps, cerebrospinal meningitis was still running at five to eight times the five year median among civilians.

These contrasting records are interpreted as an indication that the prompt control methods instituted by the Army were effective. Recovery from cerebrospinal meningitis has become reasonably certain, it is stated except in those cases which are classed as "fulminating" that is in which the course of the disease is so rapid, or diagnosis so delayed that sulfonamide drugs do not have time to take effect.

VACCINES

Another sharp contrast between civilian and service health is shown overseas by rates of infection and mortality in those diseases for which the Army and the Navy have been provided with preventive vaccines. Incidence of these ailments among service personnel is so low that rates of infection are negligible. Inoculations used in both the Army and the Navy include typhoid, smallpox, tetanus, yellow fever, typhus, cholera and plague. Some are given to all personnel others only when there is danger of infection. In these diseases the Army reports only a few scattered cases during 1942: no yellow fever, no cholera, some 50 cases of typhus but almost no deaths, almost no smallpox or plague, practically no cases of tetanus among inoculated men. Only a few scattered deaths were reported from this entire group of diseases in the Army. The Navy reports for 1942 show 19 cases of typhus and 1 of plague with no deaths, 8 cases of typhoid with one death, no cases of any of the other diseases against which vaccines are employed.

TYPHUS

Before the war's end, American soldiers undoubtedly will be fighting in areas where from 1917 to 1922 an estimated 10 million cases of typhus were reported, which resulted in approximately five million deaths. This epidemic area extends from Iran and Egypt northward through the Balkans into Poland. The global endemic area of this disease is even greater than that covered by malaria, which so far is the major disease threat in this war.

Typhus was not a problem to American soldiers in the last war because they did not fight in districts where typhus is found. This time American soldiers already have seen action in areas of infection, and the record is excellent.

Every member of our armed forces who goes into typhus zones receives three injections of typhus vaccine. Stimulating inoculations are given at intervals. This was the preparation of our soldiers who went into Egypt and North Africa.

While our forces were quartered in Egypt, there was a serious typhus epidemic among the civilian population, with an officially reported total of 32,000 cases in the first six months of 1943. There were 500 cases a week in Cairo alone during the peak of the epidemic. The death rate, as is usual with typhus, was about 30 per cent. The United States Army reported less than a score of cases and almost no deaths from typhus in the entire Middle East command during the first six months of 1943.

The vaccine used for our forces is stated to be the most effective in the world. The Germans are known to have a typhus vaccine, but it has been proved that German soldiers, on the North African front at least, are not effectively immunized, nor are the Germans believed to have the vaccine in general use as yet. Other protective measures against typhus used by the armed forces include portable live steam equipment for delousing and disinfecting clothing, which, carried in two trucks, can be shifted to various areas, fumigation delousing equipment, consisting of a synthetic rubber bag or a fumigation chamber and chemical capsules, louse repellent powders, which, applied at weekly intervals to clothing, seem to prove effective in preventing infestation of the troops. It was emphasized that typhus, unless checked, could constitute a threat to the home front also. Strenuous effort in the last war prevented importation of the louse borne strain of typhus, which is unknown in this country, although there is a weaker type of which the transmitting agent is the rat flea. To fight the disease at home and abroad, the United States of America Typhus Commission was created by an executive order of the President, Dec 24, 1942.

Members of the commission made field examinations of soldiers to determine the effectiveness of the new control methods. They also acquired sixty-nine distinct strains of typhus from various sources and four thousand serums from typhus victims, the greatest collection ever brought together at one time. The strains came from Russia, Serbia, Syria, Palestine, Iraq, Iran, Egypt and North Africa. These samples, packed in solidified carbon dioxide and flown back from Cairo to the United States, are to be used to test the effectiveness of the present vaccine and many other studies.

According to a member of the commission, the low incidence of typhus in the United States armies under epidemic conditions is presumptive evidence of the effectiveness of our vaccine. By testing it against the various strains of the diseases a definite proof can be obtained. Should the inoculation prove good only against certain strains, means can be sought to widen its efficacy. The present vaccine was developed from a strain taken in Prague in 1928. Study of the serums and strains may also make possible positive identification and diagnosis of the disease in individuals by laboratory tests.

MALARIA

Malaria constitutes a major health menace of the Army and Navy in foreign land operations in malarious areas. At home the rate is at a low level. The Army reports a rate of infection of about 0.6 men per thousand annually for this disease in 1942, or 6 men in 10,000 infected in the course of a year, and only a slightly higher rate thus far in 1943. This record is particularly good because it includes men in the continental United States who had contracted the disease in foreign areas.

It was stated on behalf of the Army that, in foreign areas, our position is better than that of other armies operating in the same theaters, and that, considering the severity of infectious conditions, our record is good. It was stressed that malaria is preventable through educating individual soldiers and officers to use constant precautions and to take full advantage of the accomplishments of science and sanitation in combating the mosquitoes which transmit the germs.

The Army's malaria rate for overseas units in 1942 was about 30 men out of a thousand, and so far in 1943 the equivalent rate is about 80. The rise this year is attributed to increased war activity in malarial areas. The number of cases of the disease in any definite locality cannot be published, according to the Army, because the enemy could use such figures to estimate the number of soldiers stationed in that area. The same explanation of security applies to specific information about many of the safeguards used by our troops in the campaign against malaria. It is stated that the Japanese failed to make adequate preparations against the fever and, as a consequence, their troops are suffering much more acutely than our own.

Security reasons explain also the lack of locality information in the Navy's statistical picture. North African bases, 17.45 per thousand, outlying and "confidential" bases, 86.03, fleet marine forces (landing forces), 155.53 (this figure would include such troops as those who landed in Guadalcanal, where the malarial situation seems to have been as severe as in any other area), naval training stations, 0.04, forces ashore, 15.00, forces afloat, 8.40, entire navy, 13.59.

The fight against malaria is primarily directed at destroying, or repelling, the mosquitoes which transmit the germ. The same repellents and larvicides work for all, but elimination of the mosquito vectors—those species which transmit the germs from human carriers to infect other human beings—from any given area is a much more complicated task. There are many varieties of mosquito vectors, with different breeding habits, and scarcely any two areas have the same pest to fight. For instance there is one mosquito along the Malay shores, and 20 miles inland an entirely different one. Some areas have more than one vector, one of which breeds in the shade, another in the sun. Thus, elimination of the shaded areas in which one bred would only provide large breeding areas for the other. Some breed in stagnant water, some in pools beside running water, some in brackish water. The vector in each case must be identified before its breeding areas can be attacked. The complexity of this work can be seen from the statement of Army epidemiologists that the variety in the Solomons differs from that in India, and that in turn from the vector in Burma, while China has still another. Even Italy and Albania, although separated only by a narrow body of water, have different varieties of mosquito. One fact limits the danger of infection: almost all of the more numerous vectors of malaria are night feeders. In thick jungles, where there is a perpetual twilight, the mosquitoes fly throughout daylight hours also. Exclusive of such areas, however, danger of infection is generally limited to periods of night combat because of protection afforded in barracks, camps and bivouacs.

There has been made available to troops, through collaboration of the U. S. Department of Agriculture, the Army and the United States Public Health Service, a repellent which, even under strenuous combat conditions, is effective for four hours. In bivouac its strength lasts up to six hours. This repellent, designated as Formula 612, is colorless and odorless, nonirritating and does not damage clothing, and a 2 ounce bottle contains enough for one man's use for a month. It is not an essential oil, like citronella, but a synthetic organic compound. Furthermore, a "foolproof" mosquito bar has been developed for camps, and, in barracks, the much publicized "health bomb" can be depended on to destroy all insect life in a space of 150,000 cubic feet. The Army previously withheld details on the contents of the "bomb" lest the enemy profit, but this prohibition was ignored by certain publications. The contents are a refrigerating chemical known as "freon," which boils at 40 degrees, combined with pyrethrum and sesame oil.

The devices which have proved so effective in home areas, where the malarial rate now is almost nil, are difficult to employ

in tropical or combat areas. In this country the breeding places of our particular mosquito vector, *Anopheles quadrimaculatus*, are destroyed by drainage of low lands and by the use of oil and larvicides. Present larvicides must be used at intervals of five to seven days, but one is being tested which can be dusted from airplanes and which is expected to prove effective up to thirty days.

The difficulty of protecting troops against this disease lies primarily in the fact that each man must take care of himself. The devices for eliminating, or foiling the mosquito vector are provided, but under combat conditions men sometimes fail to use them. Consequently "suppressors" are administered to all troops at regular intervals. These drugs serve to keep the disease in a dormant phase. During rest periods, suppressant drugs are suspended in order to discover and treat such cases of malaria as may have been contracted. However, if proper precautions are taken, suppressant drugs are not necessary, it was stated on behalf of the Surgeon General's Office. A trip by a medical commission to the highly infectious Central Africa area was cited. The medical commission used the devices made available to all the men took no drugs, and returned with an absolutely clean bill of health.

RECORDS ON HEALTH

Previous to the last war, disease regularly killed two and three times the number of men who died of combat wounds. In the last war, in spite of the influenza pandemic which distorted the statistics, somewhat less than one half of all deaths were from disease or approximately the same number as were killed in action or died of combat wounds. Nonbattle injuries accounting for about 4 per cent of all deaths.

Disease Incidence.—In 1942 this is reported lower in the Army than in the two preceding years and continues good in 1943, the Navy's report is largely parallel.

The Army's "noneffective" rate showed that in 1942 an average of only 3 per cent of the men were incapacitated for duty at any given time in continental United States while in the overseas area the rate was even lower. The Navy's "noneffective" rate stood at 2 per cent in 1942, the last year for which figures are available.

In continental United States, disease admissions to Army hospitals for 1942 were approximately 20 per cent below 1941. In respiratory diseases 1942 showed a drop of more than a fourth under 1941. During 1943 the record in both admissions from all causes and respiratory diseases is not as good as 1942 for the same period but still is better than 1941.

The Navy reports on various communicable diseases show large decreases from the levels of the last war. Lobar pneumonia killed 107 of every thousand patients in the last war but only 8 out of every thousand in 1942. Two diseases usually thought of as afflicting only children were a severe problem in the last war. Measles infected 31 out of every thousand enlisted men in 1917, 14 out of every thousand in 1918. In 1942 the rate was down to 4 per thousand. Mumps which disabled many men in the last war, dropped from 40 in 1917 to 7 in 1942, a reduction of about 82 per cent. Scarlet fever is about 75 per cent as prevalent as in the last war; its death rate dropped from 2.72 to zero. The diphtheria death rate fell from 9.57 to 0.20, measles from 22.83 to zero.

Veneral diseases, thanks to new treatments and more widespread education, present a vastly different aspect from that of the last war, when the Navy admissions for all venereal diseases ran 89 per thousand men in 1917 and 70.20 in 1918. In 1942 this figure had been more than sliced in half, and the rate was 33 per thousand.

The Army's rate of infection was even higher in the last war, running at over 9 per cent in 1918, over 90 men a year out of every thousand. The annual rate for 1940 in the continental United States was less than half that approximately 40 men per thousand, and it has continued at that low level to date. The armed forces now accept inductees with uncomplicated cases of venereal diseases because of the high percentage of cures. If this group of infected inductees is eliminated from the overall figure the current figures drop to an unprecedented low rate of about 25 men out of a thousand, that is, only 2.5 per cent of the personnel become infected with venereal disease in the course of a year.

Dysenteries (including diarrheas).—These cause a large number of hospital admissions in the Army on overseas duty. There have been sporadic outbreaks at home, but through sanitary controls the rate has been held to approximately 7 per thousand men in 1942, and although the rate has gone up the record is still good so far in 1943. At the present time, dysenteries are chiefly formidable in that they incapacitate men for active duty. The sulfonamides once more do common service here—this time it is sulfaguanidine—effecting cures of even the more severe bacillary dysenteries in five to seven days.

Overseas where under combat conditions sanitary controls are more difficult the rate is higher, running about 30 men per thousand contracting the ailment in 1942. There has since been a further increase due once more to increased war activity in regions where these diseases are prevalent, and the rate thus far in 1943 has been about 50. This figure means that, out of every thousand men in overseas service during a year, 50 will be hospitalized for dysenteries if the average rate for the year thus far continues to operate.

The Navy reports a rate of 16.44 men per thousand admitted to treatment during 1942 for a group of ten selected gastroenteric disturbances including food poisoning, food infections and the dysenteries. The nine year median of these ailments is 16.30 men per thousand, so that the war rate for this group is consistent with the peacetime average.

The chief work of preventing gastrointestinal infections devolves on sanitation. Water is carefully inspected and treated. Sometimes it is boiled, often filtered and chlorinated. Messes are carefully supervised, and the sanitary measures employed there are checked constantly by the medical departments. Food handlers are inspected regularly. Ashore, fly control is important and inspection of animal foods under the veterinary section and of fresh vegetables by the medical division are strictly enforced. Storage of food and refrigeration also are a matter of regulations.

Despite those strenuous efforts there have been outbreaks of food poisoning and dysenteries. Laboratory tests on the causes of 169 outbreaks traced 28 of them chiefly to the Flexner dysentery bacilli and to staphylococci. At least one outbreak was attributed to "faulty housekeeping." In this connection it was pointed out that the methods of dishwashing used in homes would be totally inadequate in camps. Dish towels are forbidden both because of possible contamination through the cloth and because "wiping" can cover up inadequate washing. The length of time dishes must be washed and the temperature of the water are a matter of army regulations. All dishes must be washed "not less than forty seconds in water of 140 degrees." This must be followed by 'immersion for thirty to sixty seconds' in water of the germ killing temperature of 180 degrees. Where thermometers are not available boiling water must be used where heating facilities are scanty, a chlorination process is required to make sure of disinfecting the dishes.

Garbage cans must be kept covered, must be cleansed daily and may not be emptied from one container to another. Instead, cans are loaded on trucks hauled to the compost and emptied there, cleansed and then returned. It is forbidden to whitewash the cans, because they might thus give a deceptive appearance of cleanliness and so might not receive a thorough scrubbing. The compost heaps are ditched and treated with oil to prevent attraction and breeding of insects. This does not affect the value of the compost fertilizer. "It is not unusual," it was stated, "to see such composts completely free of flies."

OTHER DISEASES

In the last war the influenza pandemic was responsible for in the neighborhood of 800,000 admissions to hospitals and for perhaps 25,000 deaths in addition to many deaths ascribed to pneumonia but brought on as a result of influenza infection. With other respiratory diseases it caused about one third of the total admissions for disease in 1918, and roughly 80 per cent of disease deaths.

In general, conditions have been better in this war. An outbreak of mild influenza started in December 1941 and carried over into early 1942 and produced relatively high admission rates. Subsequently the curve has shown only the expected seasonal variations. Practically no deaths occurred as a result of this outbreak.

One form of pneumonia, designated by the Army as "primary typical pneumonia," appeared during the last year. In March 1942 the Surgeon General called attention to the disease and so designated it. In the first month there were over 100 cases reported, and the frequency increased to a peak in April 1943 of about 3,500 cases. Since then there has been some decline. Mortality is low, but the disease contributes heavily to keeping men off active duty, since lesions, demonstrable by x-ray, persist for several weeks. In the Navy, cases of atypical pneumonia ran 15 per thousand during the first six months of 1943.

Measles—Epidemic during the last war, measles has been relatively unimportant this time to either Army or Navy. In March 1941 measles reached a peak rate of almost 60 per thousand annually in the Army in the continental United States. In March, peak month in 1943, it was about 30. During the last war it was the sixth greatest cause of admissions to hospitals on account of disease, the seventh in loss of time and fourth among the diseases as cause of death. By far the larger number of deaths from measles was caused by complications, of which the most important was streptococcal bronchopneumonia.

Mumps—In the last war mumps was fourth in numerical frequency among diseases in the Army. It was third as a cause of loss of time in the Army, first cause in the Navy, and in 1918 showed the exceptionally high rate of roughly 70 per thousand annually in the Army, 35 per thousand in the Navy. It has caused but little trouble in this war. The Navy reports an incidence of 7 cases per thousand.

Tuberculosis—This disease was a costly factor in the last war. The rate for the Army was 9 men per thousand in admissions to hospitals. It caused 6 discharges for disability annually per thousand men in the Army. The death rate was about 0.7 per thousand. It was first among all reasons for dismissal from the Army, causing almost 15 per cent of the disability discharges. It was felt that tuberculosis often was present before men were admitted into the armed forces and that gas injury rarely was an actual cause. In this war all inductees received chest x-ray examination in their preliminary examination. This is considered the best method of detecting incipient or early tuberculosis, and many men have been brought under treatment as a result of this process.

Veneral Diseases—These ranked second as a cause of admission to hospitals during the last war and second in loss of time. They present a much more hopeful picture now. Because new methods of treatment indicate a high percentage of cure, the Army now is accepting men who have uncomplicated cases of venereal diseases. Sulfonamides are used for gonorrhea, and cures run about 80 per cent in the period of ten days. Syphilis often yields to new techniques within a maximum of six weeks. The Army lays stress also on improved prophylactic facilities and extensive instruction of the men in the hazards of the disease. There are periodic and surprise inspections. Recreational facilities are provided within the camps, and civilian authorities have cooperated in providing healthful entertainment in the cities.

Filaria—This tropical disease, a parasitic ailment transmitted by mosquitoes, causes some concern among naval forces. Its endemic areas cover a large part of the tropical zone of the world. The larvae of the parasitic worm are injected through the bite of the mosquito, and the life cycle of the microfilariae in the human system results in lesions and glandular swellings. Elephantiasis, or gross deformation through enlargement of certain parts of the body, has been traced to one variety of this parasite. The disease is of slow development, and the Navy and the Army are alert to avert infection of the personnel. Reports show fewer than seven cases per hundred thousand men in the Navy.

WOMEN'S AUXILIARIES

With the exception of the Wacs, the women's services keep no separate records, and their care and standards of health are incorporated in the reports of the parent services. It is stated, however, that their health problems are much the same as for the men save for venereal diseases, in which their record is much better.

The Army has prepared a statement of the causes of discharge for those Wacs released for disability. It shows that about

25 per cent were released because of ailments or defects peculiar to women and about 45 per cent for neuropsychiatric disorders. In explanation of the latter statement it is said that many of those discharged for neuropsychiatric disorders would probably not be considered as abnormal in civilian life.

Of other individual defects, arthritis caused 4 per cent of all discharges, foot defects 4 per cent and organic heart disease 2 per cent. Discharges for venereal diseases are negligible. The total number discharged for medical reasons from August 1942 to May 1943, the period covered by the report, was about 1,100.

COAST GUARD

At the present time the Coast Guard has available 1,447 beds in various infirmaries throughout the service. This number of beds is entirely independent from the facilities of either the Marine Hospitals of the Public Health Service, which currently are supplying 1,536 beds for coast guardsmen or naval hospitals. Naval hospitals admit Coast Guard patients when necessary.

The Coast Guard is operating eighteen mobile dental clinics for personnel serving at isolated stations within the continental limits of the United States. These mobile stations are equipped to operate with or without commercial electric current.

The average number of coast guardsmen ill of communicable disease admitted per week has been 500. Owing to lack of clerical help, the Coast Guard is unable to provide accurate statistics or to compute the annual rate per thousand for such conditions. At present 143 dental officers and 294 medical officers of the Public Health Service are serving full time with the Coast Guard.

DENTAL CARE

The Army has a Dental Corps of 13,000 officers, wishes to commission another 800 civilian dentists and will commission another thousand from dental schools. Those in the service now have a record of 4 million cases admitted to treatment during 1942 and more than 12½ million sittings. They installed more than seven and a half million fillings and, during the month of March 1943, extracted 582,546 teeth. In the same month they installed 456,783 dentures, and it was stated that more than half the patients treated had not been accustomed to visit dentists regularly.

Dental infection in the United States is placed at 16 per thousand men, overseas as less, 13 per thousand. Dentists have been provided with portable equipment, collapsible chairs, foot powered drills and portable sterilizers for use close to combat areas. Records show that there are, under these conditions, about 250 sittings per thousand men.

The Navy has 4,000 dental officers, at least 1 assigned to every ship of cruiser class, or larger, and to every tender, hospital ship and transport. In a recent month the corps installed 50,000 fillings and restorations. Naval dentists have the same training routine as the doctors, since they may have to double for medical officers in the exigencies of combat. Their training school is at Bethesda, Md., and they may volunteer for special services such as paratroops, marine or submarine work. Those who specialize in maxillofacial surgery are sent to the Mayo Clinic for study. This work of restoring facial structure damaged in battle may include plastic surgery also and has an important place in service plans for rehabilitation of service men after and during the war.

HOSPITAL FACILITIES

The Army maintains about eighty general hospitals in the United States. These generally contain a thousand beds or more each. Backing up these large institutions, the department maintains hospitals of from 25 up to 1,000 or more beds at some six hundred posts, camps and stations around the world. The number of beds available in the United States for Army personnel totaled about 350,000 in September, with more hospitals building. In addition to these there are many hospitals established abroad. The Navy has hospital ships and mobile hospital units which comprise 1,000 beds. The Army has base hospitals, field hospital units, evacuation hospitals and casualty stations organized right up to the front lines in combat areas.

In continental United States the Navy maintains thirty six hospitals and seven convalescent hospitals with a total of 40,000 beds, in addition to dispensaries at posts and stations with a total of 25,000 beds.

ARMY

REHABILITATION OF THE BLIND AND HARD OF HEARING IN ARMY HOSPITALS

The War Department Washington, D C recently released Circular Letter No 162 regarding the rehabilitation of the blind and hard of hearing in army hospitals, which is as follows

STATEMENT OF POLICY

(a) Deafness and blindness are deprivations of an essential means of orientation of the normal person. The particular emotional problems of the newly blinded and deafened and their need for assistance in learning how to live without sight and hearing create a need for specialized rehabilitation.

(b) It has been established that it is essential to make an early contact with the handicapped soldier by trained personnel who can encourage him and help him to look forward hopefully to the future. Oftentimes the onset of blindness or deafness is coincident with convalescence from severe medical illness or complicating wounds which will confine a patient in the hospital for a long period of time. Early treatment which restores some of the patient's confidence and optimism will do much to shorten the rehabilitation period. It is for this reason that the program is to be started in an Army hospital instead of waiting until after the patient's discharge. It is the intention of the Medical Department to make available during the period of Army hospitalization of rehabilitation service to all who lose their eyesight or their hearing, either here or abroad. The Army does not intend to take over the entire rehabilitation program that is the province of the Veterans Administration for pensionable disabilities or, in cases not eligible for veterans' benefits, of the State Vocational Rehabilitation Services.

(c) The method of admission to a rehabilitation service of a soldier with blindness or with defective hearing, to a degree which precludes the return of the patient to duty is described in a memorandum of the Adjutant General, W40-14-43, 28 May 1943. This memorandum states that patients received from overseas who require specialized treatment for blindness will be classified by general hospitals receiving them and reported to the Surgeon General for transfer to the Valley Forge General Hospital, Phoenixville, Pa., or the Letterman General Hospital at San Francisco. The same procedure governs the care of the deaf, who may be transferred to Deshon General Hospital, Butler, Pa., Hoff General Hospital, Santa Barbara, Calif., or Borden General Hospital at Chickasha, Okla. Patients requiring such treatment, whose disability was incurred in continental United States should also be reported with a view to transfer to specialized hospitals when their physical condition does not preclude travel. The special personnel and equipment needed for rehabilitation work is not available for general use elsewhere.

THE REHABILITATION PROGRAM FOR THE BLIND

(a) It is intended that contact be made with the blind soldier at the earliest possible time by a blind worker before the psychological aspects of the deprivation of sight may make any deep inroads on the personality. The possibility of a happy life may be best presented by one familiar with the hardships of that experience.

1 *Blind Consultant*—A blind man well adjusted to his handicap and capable of imparting that philosophy of life so essential in securing proper psychological support has been appointed to serve in this capacity. It is intended that the consultant travel to station or general hospitals where blinded casualties are detained in advance of their being sent to the special hospital center for the blind. He is available for this service and will be advised by the Surgeon General of cases of blindness in other than special hospitals in order that he may visit them. The consultant may be expected to assist the medical staff to institute a program of rehabilitation and to arrange for local agencies to participate on a voluntary basis.

The necessity for prompt notification of the Surgeon General's Office of blinded casualties in the manner outlined in paragraph b in the statement of policy is evident.

(b) The Medical Department has placed in the hospitals designated for the care of the blind well qualified specialists in diseases of the eye and in those related conditions requiring maxillofacial and plastic surgery. Every blinded patient should have the benefit of a psychiatric consultation and an evaluation of special problems that may exist.

(c) *Education for Social Living* 1 *Ward Care and Activities* All personnel who are to handle blinded patients should be instructed in the proper approach to the problems of the blind. Retraining in self care is essential. Avoid excesses of sympathy and doing too much for the patient. Protect him from well intentioned, untrained people who want to "do something helpful." Teach the patient to help himself. Encourage the patient to participate fully in daily physical, educational, recreational and social activities.

2 *Instruction in Special Techniques*—Trained instructors of the blind should conduct individual lessons in braille reading and writing, in typing and handwriting, and in the use of other techniques and devices used by the blind. Braille can often be introduced to the patient through learning to play cards marked with symbols. Plunging a newly blinded person too suddenly into braille training is often discouraging. The occupational therapist may teach motor coordination which assists in the mastery of the environment. Ability to use one's hands and to accomplish the ordinary tasks, the development of skills, does much to give the person confidence that he is on his way once again to becoming a healthy person. The Red Cross recreational worker may encourage the patient to participate in both indoor and outdoor recreational activities and to continue normal social relationships.

(d) *The Attitude of the Family* The social worker should assist in the very important problem of preparing the family for the reception of the blind patient in the home. An emotionally upset and oversympathetic family may, through its pity, destroy much of the self confidence and self reliance that the patient will learn unless they are prepared to meet the situation wisely. The social worker should discuss the problem with the family before they visit the patient the first time. Through their agencies the Red Cross can reach into the home and bring the interpretations necessary in every case before the patient leaves on furlough or is discharged. The social worker will also make certain that the patient is given every encouragement to continue his retraining under the direction of the Veterans' Administration and will help the patient to understand the programs and pensions available for his continued care.

(e) *Further Care of the Blind* 1 Usually it will be possible to transfer the blinded casualty to the hospital center which has facilities and special personnel for retraining.

2 The Veterans' Administration is charged with the responsibility for rehabilitation of blindness, acquired in line of duty, and for vocational training necessary to restore the patient to a position in society where he may be reasonably self reliant if this is at all possible. Encourage every patient who is to be discharged to file an application for training with the Veterans' Administration facility located nearest his place of residence before making any other plans for after care.

THE REHABILITATION PROGRAM FOR THE DEAF

(a) *The Initial Trauma of Deafness*—It has been said that deafness offers a more severe handicap than blindness. Its disturbing effect on the personality has long been recognized. The individual feels alone, seclusive and sensitive and is very likely to feel talked about. Oftentimes he becomes preoccupied and self centered. The importance of an early contact with a hard of hearing person cannot be overemphasized, as the destructive effects on the personality can be offset by an intelligent optimism as opportunities for retraining and lip reading are made clear.

(b) *Medical Aid*—The three centers named for the care of those with impaired hearing have been staffed with experts in diseases of the ear. Special equipment for the testing of hearing and speech reception are made available in those insti-

ORGANIZATION SECTION

OFFICIAL NOTES

AMERICAN MEDICAL ASSOCIATION BOARD OF TRUSTEES, MEETING OF SEPT 16-17, 1943

A two day meeting of the Board was held, preceded by a full day meeting of the Executive Committee. Some of the matters acted on are reported here, others will be discussed at later meetings.

RADIO BROADCASTING

The Board authorized the resumption of the Association's broadcast "Doctors at War" on November 1, to continue for twenty-six weeks.

APPOINTMENT TO COUNCIL ON PHARMACY AND CHEMISTRY

Dr Eugene M Landis was elected to succeed Dr William C Rose (resigned) on the Council on Pharmacy and Chemistry.

COMMITTEE ON STUDENT HEALTH

The resignation of Dr A V Bock from the Committee on Student Health, because of being heavily burdened with work, was accepted.

COMMITTEE AND COUNCIL REPORTS

A report from the Council on Medical Service and Public Relations was received and placed on file, as was also one from the Central Committee for Wartime Graduate Medical Meetings. The Board authorized the publication of a report of the Committee on Postwar Medical Services.

ENLARGEMENT OF ADVISORY COMMITTEE OF COOPERATIVE MEDICAL ADVERTISING BUREAU

Dr Stanley B Weld, Hartford, Conn., and Dr E M Shanklin, Hammond, Ind., were elected to the Advisory Committee of the Cooperative Medical Advertising Bureau.

APPOINTMENT OF REPRESENTATIVES

Dr Victor Johnson, Secretary of the Council on Medical Education and Hospitals, was appointed to represent the American Medical Association on the Special Committee on Accrediting of the National League of Nursing Education.

Dr Morris Fishbein was appointed to serve as representative of the American Medical Association on the Joint Committee on Indexing and Abstracting of the American Library Association.

Dr Alton Ochsner, New Orleans, has been selected to represent the American Medical Association at the Primer Congreso Mexicano de Cancer Segunda Medica de Occidente to be held in Guadalajara, Jalisco, Mexico, the first week in November.

LEGISLATION

The Bureau of Legal Medicine and Legislation was instructed to call attention in its bulletin to bill H R 2985, which provides for the garnishment of wages and salaries of civil employees of the United States.

SCIENTIFIC EXHIBITS

An appropriation was made for scientific exhibits for the last quarter of the current year.

Drs Ludvig Hektoen and Urban Maes were elected to succeed themselves on the Committee on Scientific Exhibits for a period of three years.

1944 SESSION OF ASSOCIATION

The week of May 21 was selected for the next annual session of the Association, provided it is deemed propitious to hold a meeting next year.

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

The Annual Conference of Secretaries and Editors of Constituent State Medical Associations will be held at the offices of the American Medical Association at 535 North Dearborn Street, Chicago, on Nov 19 and 20, 1943. The first session of the conference will be convened at 10 a m Friday, November 19, and an afternoon session will be held on that day. On Friday evening a program designed to be of particular interest to the editors of the constituent state medical association journals will be presented at the Palmer House. The concluding session of the conference will be held at the offices of the Association on the morning of Saturday, November 20.

It is expected that this conference will be attended by all the secretaries and editors of the constituent state medical associations, by other officers of the constituent state medical associations and by officers of component county medical societies who may wish to attend. Members of the Association will be cordially welcome.

It is important that railroad and hotel accommodations be reserved immediately.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—A public hearing has been scheduled by the House Committee on the Judiciary on H R 786, the Tolan bill to permit chiropractors to treat the beneficiaries of the United States Employees' Compensation Act. The hearing will be before subcommittee No 2 of the Committee on the Judiciary, Nov 3, 1943, at 10 30 a m. Representative Weaver of North Carolina is chairman of the subcommittee, and the other members are Representative Byrne of New York, Representative Cravens of Arkansas, Representative Reed of Illinois, Representative Towe of New Jersey and Representative Jennings of Tennessee.

H R 2976 has been reported to the House of Representatives with the recommendation that it pass, providing that during the present war and for six months thereafter the superintendent and all other members of the Navy Nurse Corps entitled under existing law to relative rank shall have and shall be designated by the rank which corresponds to the relative rank heretofore provided by law for such superintendent and members.

Bills Introduced—H R 3427, introduced by Representative Maas, Minnesota, provides dispensary treatment and hospitalization in Army and Navy hospitals for retired enlisted men of the Army, Navy, Marine Corps and Coast Guard.

Medical News

(PHYSICIANS WILL CONFERR A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Memorial Fund for Dr Wolfsohn—A memorial fund has been set up at the Stanford University School of Medicine to honor Dr Julian M Wolfsohn, clinical professor of medicine (neuropsychiatry) at Stanford, who died July 1. The fund will be used by the school of medicine especially for neurology and psychiatry and will honor Dr Wolfsohn, who had been a member of the staff since 1913. The fund was contributed by friends of the late physician.

Chiropractor and Osteopath Sentenced for "Careless Tonsillectomy"—A chiropractor and an osteopath were sentenced to two years in prison on August 17 for conspiracy to violate the medical practice act, according to the Los Angeles *Daily News*. Their retrial on manslaughter charges was ordered by the court following the deaths of 2 children from what was described as "careless tonsillectomy." Harry Navarre is the chiropractor and Leslie R Nunn the osteopath. It is reported.

Hamilton Anderson Released by Japanese—Dr Hamilton H Anderson professor and head of the department of pharmacology at Peiping Union Medical College, Peking is one of a group of persons announced by the state department as repatriated by the Japanese. The newspaper report October 14, indicated that Dr Anderson was aboard a Japanese liner en route to Portuguese India. Prior to his joining the Peiping Union Faculty Dr Anderson had been in charge of graduate education in the Council on Medical Education and Hospitals of the American Medical Association. Before joining the Association he had served as assistant clinical professor of pharmacology at the University of California Medical School, San Francisco.

CONNECTICUT

Vesalius Celebration—On October 30 the Yale Medical Library will present the following program to observe the 400th anniversary celebration of the publication *De Humani Corporis Fabrica* by Vesalius.

Ernst A Cassirer, Ph D New Haven The Philosophical Character of the Science of the Renaissance.

Dr Edward C. Streeter Stonington Vesalius at the University of Paris.

Carl P. Rollins M A New Haven Oporinus and the Fabrica.

Dr Arturo Castiglioni Baltimore The Attack of Puteus on Vesalius and the Defense by Cuneus.

During October the library has on display a Vesalian exhibit drawn from the collection bequeathed to Yale by the late Dr Harvey Cushing. At the time of his death he was engaged on the compilation of a definitive bibliography of Vesalius which is now in press and is being published under the auspices of the Historical Library by Mr Henry Schuman, New York.

Psychologist Named Research Director for Public Welfare Council—Karl F Heiser Ph D director of the psychology laboratory at Norwich State Hospital Norwich has been appointed research director for the state public welfare council. One of Dr Heiser's first activities will be to assist in the study of Connecticut's aged infirm and chronically ill. A committee of the Connecticut State Medical Society will participate in the study, which according to newspaper reports is to start sometime during October. The report stated that this problem was given some attention about three years ago by a special state commission headed by Dr Creighton Barker. New Haven executive secretary of the state society. The commission reported at that time that there was no statistical evidence available that will permit any reasonably accurate statement of the costs to the state of those people who are 60 years of age or more who have through state funds received hospital and medical care because of chronic illness. One of the aims of the new study is to determine whether there is a need for a separate state institution to take care of such cases. Dr Heiser has been granted leave of absence from his state hospital position to carry on the study.

ILLINOIS

Grant for Poliomyelitis Study—The National Foundation for Infantile Paralysis has granted \$10,325 to the Illinois Committee on Infantile Paralysis to study the persistence of the virus of poliomyelitis in stools of convalescent and healthy carriers, for investigation of the port of entry and exit of poliomyelitis in acute cases and for the correlation of neuropathology

and clinical findings in cases of poliomyelitis during an acute outbreak. Dr Edward A Piszczek, Chicago, director of health of Cook County, is chairman of the Illinois Committee on Infantile Paralysis.

Conrad Sommer Heads New Mental Hygiene Section—Dr Conrad S Sommer, chief medical officer in the department of public welfare, has been named deputy director of the mental hygiene service, a newly created position. The new post is one of three created by the department of public welfare in a reorganization to coordinate activities. Dr Sommer, in his new capacity of deputy director of the mental hygiene section will supervise the twelve mental hospitals, the Neuropsychiatric Institute the division of veteran service and the bureau of home economics and nutrition. Wallace W Clark formerly superintendent of the division of public assistance and recently assistant regional director of the federal office of community war services for the states of Wisconsin, Indiana and Illinois has been named deputy director in charge of the section of social services, covering all nonmental institutions operated by the department and also the division of child welfare, the division of services for the physically handicapped, the division of visitation of adult blind, the Institute for Juvenile Research the division of delinquency prevention and the division of rehabilitation of women and girls.

CHICAGO

Koessler Fellowship Awarded—Maurice R Hilleman, B S, has received the Jessie Horton Koessler Fellowship, carrying a stipend of \$500, according to an announcement from the Institute of Medicine of Chicago. The 1943-1944 fellowship will enable Mr Hilleman to work with Dr Francis B Gordon in the Ricketts Laboratory in the University of Chicago on the immunologic relations on the psittacosis-like viruses.

The D J Davis Lectureship on Medical History—On October 15 Jens Christian Bay, librarian, John Crerar Library, gave the first address under a new lectureship established by friends and colleagues of Dr David J Davis who retired this year as dean of the University of Illinois College of Medicine. The lecture fund was formally presented to the university on this occasion and will be known as the D J Davis Lectureship on Medical History. The title of the first lecture was "A Prelude to Medical History."

Personal—Everett W Jones has been named vice president of the Modern Hospital Publishing Company, effective November 1. Mr Jones, who is head hospital consultant in the governmental division of the War Production Board and director on leave of Albany Hospital Albany N Y will for the present in his new position concentrate on problems involving the Hospital Yearbook and Latin American publications.—Raymond M Hilliard, LL B executive secretary of the Illinois Aid Commission announced that his title is now public aid director.

Regional Meeting of College of Physicians—On October 16 the American College of Physicians sponsored a regional meeting at the Drake Hotel, Chicago, in conjunction with the postgraduate course in endocrinology, October 11-16, and the wartime graduate medical meeting at the United States Naval Hospital, Great Lakes Ill, October 15. The session was for the states of Illinois, Indiana Iowa Michigan and Wisconsin. Among the speakers were:

Lieut Col Ford K Hick M C A U S The Application of

Graphic Training Aids to Medicine

Dr Robert M Moore Indianapolis Effort Syndrome in Soldiers

Capt James E McFarling M R C Personal Experiences in New

Caledonia with Special Reference to Malaria

Lieut Col Frank Dennette Adams M C A U S, Some Clinical

Observations on Meningococcal Infection

Brig Gen David N W Crant M C U S Army Aviation Medicine

Dr Andrew C Ivy Bethesda Md. Recent Observations of Practical

Significance on Gastric Secretion

Dr Fuller Albright Boston Classification of Hypoparathyroidism

Dr Ovid O Meyer Madison Wis Some Aspects of the Diagnosis

and Therapy of Hypochromic Anemias

INDIANA

State Medical Election—Dr Neslen K. Forster, Hammond, was chosen president-elect of the Indiana State Medical Association at its meeting in Indianapolis in September. Dr Jacob T Oliphant Farmersburg will take office as president of the association on Jan 1 1944. Dr Carl H McCaskey Indianapolis is now president of the association.

Division of Tuberculosis Control Created—The Indiana State Board of Health has established a tuberculosis control division to coordinate the work in the state against tuberculosis. Dr Holland Thompson Montgomery Ala director of tuberculosis control for the state of Alabama has been named director of the new division. At present all tuberculosis control activities of the state board of health are administered by the communicable disease division.

Academy of Medicine Formed—Articles of incorporation have been issued for the Evansville Academy of Medicine, Inc., which has been organized by local physicians who are members of the Vanderburgh County Medical Society, according to the *Evansville Courier*, September 28. Dr. Stanton L. Bryan, Charles C. Sutter and Robert R. Acre have been named the incorporators. First members of the board of directors will be Drs. Keith T. Meyer, William M. Cockrum, William Lawrence Daves, Henry J. Paul, Daniel Tweedall, Pierce MacKenzie and James V. Welborn. The academy plans to purchase a suitable building which will house an auditorium for lecture purposes, kitchen and other facilities. There will also be offices for the academy officers and directors and a permanent secretary in addition to headquarters for the county medical society and the Evansville and district dental societies.

IOWA

New Director of Tuberculosis Control—Dr. Leon H. Flancher, epidemiologist, division of preventable diseases (tuberculosis control), Minnesota Department of Health, has been appointed director of the division of tuberculosis control of the Iowa State Department of Health. Dr. Flancher graduated at the Milwaukee Medical College in 1910.

MAINE

State Society Votes to Hold 1944 Meeting—On August 1 the council of the Maine Medical Association voted to resume the scientific session of the association in 1944. The meeting was omitted in 1943, although a meeting of the house of delegates convened. The vote of the council was taken after a return from questionnaires sent to all members of the association showed 58 per cent in favor of a return to the former custom.

MICHIGAN

State Medical Election—Dr. Andrew S. Brunk, Detroit, was chosen president-elect of the Michigan State Medical Society at its meeting in Detroit in September and Dr. Claude R. Keyport, Grayling, was installed as president. The society voted to reject the plan set up by the Children's Bureau for the care of wives and infants of enlisted men on the ground that the plan "is a clearcut case of government subsidy of the services of a doctor," newspapers reported.

Appointments for Proposed Medical Science Center—The plan to develop a \$50,000,000 medical center at Wayne University College of Medicine, Detroit, now takes shape with the announcement of definite appointments for the program. The board of trustees of the Wayne University College Hospital was incorporated on August 17. Members of the board include Mr. Alex J. Groesbeck, Mr. B. Edwin Hutchinson and Dr. A. William Lescohier chosen by the board of education of Detroit, and Mr. Wendell W. Anderson, Mr. Frederick J. Gartner and Dr. J. Milton Robb chosen by the Wayne County Board of Education. Dr. Edgar H. Norris as dean of the college of medicine is the seventh member. Dr. Frank F. Tallman, Lansing, director of mental hygiene of the Michigan State Hospital Commission, has been assigned by the commission to the Wayne Medical Science Center as adviser and consultant to the board and in the development of its Industrial Health Institute and psychiatric units. The industrial institute will not be for physicians alone. It will help anybody who deals with people, it was announced, concerning itself with plant morale, human relationships within the plant, pointing the way to relate the man harmoniously with his job. One of the first units to be built by the state near Detroit will be a 2,500 bed mental hospital to serve Wayne County. The center will maintain a neuropsychiatric and a percommitment clinic in its medical hospital. The initial handling of patients will be in the outpatient department, where an attempt will be made to cure without hospitalization. George F. Pierrot, director of the United Service Organizations in Metropolitan Detroit for the past seventeen months, has been appointed executive secretary of the finance committee for the proposed medical science center. Newspapers recently reported that an appropriation of \$10,000 to initiate plans for the development of the center at Wayne University had been approved by the ways and means committee of the county board of supervisors. The selection of a site by the committee on buildings and grounds is now under consideration and will probably be decided by November 1. The plan includes a \$2,000,000 hospital and other center units, which will be operated by the Wayne University College of Medicine. Complete details have not been announced for the progress of the center, but it is hoped that this development will expand available facilities for the treatment of indigent and mental patients as well as establish a center for the study and prevention of industrial accidents and occupational diseases.

NEW HAMPSHIRE

The Mayo Lecture—The first W. J. and C. H. Mayo Memorial Lecture will be delivered at Dartmouth Medical School, Hanover, November 4, instead of November 5, according to an announcement from the university. The talk will be presented by Capt. Winchell M. Craig (MC), U. S. Naval Reserve, chief surgeon, Naval Hospital, Naval Medical Center, Bethesda, Md., on "Warriors Against Disease" (*THE JOURNAL*, October 9, p. 365).

NEW YORK

Personal—Dr. George D. Winchell, coroner of Wayne County for more than twenty years, was honored by the Wayne County Medical Association recently in recognition of his completion of fifty years in the practice of medicine.—Dr. William E. Mosher, Jr., Cortland, has resigned as health commissioner of Cortland County to enter the armed services.—In August the *Albany Times-Union* named Dr. Edward F. Urba, Kinderhook, as its "hero of the month." According to the state medical journal Dr. Urba, despite the lack of proper surgical equipment, amputated the leg of an engineer trapped in a swaying locomotive during a derailment at Chatham. The presentation of a \$25 war bond is the method used by the *Times-Union* of "honoring unsung heroes on the home front."

New York City

Postgraduate Talks—Dr. Harvey B. Matthews, Brooklyn, will discuss "Causes and Management of Prolonged Labor" before the Suffolk County Medical Society, October 27. The talk is a part of the graduate instruction provided by the Medical Society of the State of New York in cooperation with the state health department. On October 21 the two groups sponsored a symposium on "Meningococcal Meningitis" before the Madison County Medical Society. Speakers were Drs. John Howard Ferguson and Abraham Clement Silverman, Syracuse.

Dr. Brill Named 1943 Salmon Lecturer—Dr. Abraham A. Brill, formerly lecturer in psychoanalysis and abnormal psychology at New York University and now lecturer in psychoanalysis and psychosexuality, Columbia University, will deliver the Salmon Lectures for 1943 at the New York Academy of Medicine, November 5, 12 and 19. Dr. Brill will speak on "The Psychoanalytic Contribution to Psychiatry." Individual topics will be "The Psychiatric Scene of 1900," "The Origin and Development of Interpretative Psychiatry" and "Freud's Specific Contributions to Knowledge of Psychosis."

Rehabilitation Clinic Opened at Lenox Hospital—On October 7 Lenox Hill Hospital opened a rehabilitation clinic to provide needed psychiatric help for men rejected at induction or discharged from the armed forces on psychiatric grounds. The clinic is similar to one established at New York Hospital and is under the direction of Dr. Thomas K. Davis with Dr. Johan H. W. van Ophuysen, attending psychiatrist, in charge. Work is being done by the neuropsychiatric staff assisted by a group of volunteer psychiatric social workers and secretaries, sessions beginning at 7:30 each Thursday evening. According to an announcement, although the therapeutic aspect will be stressed, clinical and statistical research will not be neglected, as this appears to hold promise of the possible solution of post-war problems.

OHIO

Memorial for Physician—Members of the Gallia County Medical Society are sponsoring a fund for the beautification of the Gallipolis City Park as a memorial to the late Dr. George G. Kineon, medical director and superintendent of the Ohio Hospital for Epileptics. Dr. Kineon was president of the park planning commission.

Personal—Dr. Jay McLean, formerly with the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, has been appointed associate professor of surgical research at the Ohio State University College of Medicine, Columbus, where he will continue his work on heparin.—Dr. Edward J. McCormick has resigned as president of the Toledo Board of Health. Dr. McCormick recently moved from Toledo to the Village of Ottawa Hills, thus making him ineligible to continue on the board.

Mass Chest X-Ray Examinations—What is being claimed to be "the greatest mass chest x-ray examination for tuberculosis ever attempted among industrial workers in the United States" is being undertaken in Cleveland under the supervision of Dr. Joseph B. Stocklen, tuberculosis controller of Cuyahoga County, and local health commissioners, and with the cooperation of the Anti-Tuberculosis League and the support of the Cleveland Academy of Medicine, the state medical journal announces. The survey crew, working with a portable high

speed fluorographic unit lent by the U S Public Health Service, expects to visit every major war plant in Greater Cleveland. Support for the survey has been pledged by local labor organizations. An examination of the chest will be given free on a voluntary basis to every plant worker. The reports will be confidential and will be given only to the worker or, on his request, to his private physician. Company physicians will not have access to these reports, according to the state journal.

PENNSYLVANIA

Physician Celebrates Ninety-Fifth Birthday—Dr Joseph H Shull, physician and attorney of Stroudsburg observed his ninety-fifth birthday on August 17. Newspapers report that Dr Shull was elected to the state senate in 1886, serving until 1890. In 1904 he went to Congress for a term. He is still in active practice.

State Medical Election—Dr William Bates, Philadelphia, was chosen president elect of the Medical Society of the State of Pennsylvania at its meeting in Philadelphia in October. Dr Augustus S Kech, Altoona, was installed as president. Dr Walter F Donaldson, Pittsburgh, was reelected secretary and Dr Henry G Munson, Philadelphia, assistant secretary.

Philadelphia

Annual Postgraduate Institute—The Philadelphia County Medical Society announces that it will hold its ninth annual Postgraduate Institute May 25, 1944. The theme of the institute will be "Modern Diagnosis and Treatment."

The Mütter Lecture—Dr Virgil H Moon, professor of pathology, Jefferson Medical College of Philadelphia, will deliver the Thomas Dent Mütter Lecture of the College of Physicians of Philadelphia, December 1. His subject will be "The Dynamics of Shock as Related to Clinical Problems." The college cooperates with the Philadelphia County Medical Society in this annual series of lectures. On November 10 Brig Gen. Fred W Rankin M R C, will lecture in this cooperative series on "Peptic Ulcer in the Army."

SOUTH CAROLINA

Changes in Health Officers—Dr Benton M Montgomery has been named director of the Clarendon County Health Department, succeeding Dr Edward Alex Herse, who is now in charge of the Sumter County and City health departments. Dr Montgomery is also director of the Williamsburg County Health Department, according to the state medical journal.

TEXAS

University News—The University of Texas Chapter of Phi Beta Pi Fraternity has given funds to the University of Texas Medical Branch, Galveston, to establish an annual lectureship. The medical school announces the publication of *Texas Reports on Biology and Medicine*, a quarterly scientific periodical available without charge to the libraries of medical institutions throughout the world.

Personal—Mr Lawrence R Payne, superintendent of the Hillcrest Memorial Hospital Waco, has been named administrator of Baylor University Hospital, Dallas, effective October 15. Mr Payne before taking over his Waco position had served six years as assistant superintendent to the Baylor Hospital.—Dr Tilman E Dodd, Bryan, has resigned as health officer of the Bryan Brazos County Health Unit.—Dr John Schreiber, San Augustine, has been named health officer of Nolan County.

UTAH

Personal—Dr Rodger J B Hibbard, formerly clinician and pathologist at the Arkansas Tuberculosis Sanatorium, State Sanatorium, has been chosen superintendent of the Utah State Tuberculosis Sanatorium, Ogden, effective October 5, succeeding Dr Edward J Nagoda, resigned.

Public Health Election—E H Bramhall, BS, director of the division of laboratories of the state board of health, was chosen president-elect of the Utah Public Health Association at its annual convention, September 25, in Salt Lake City and Dr Hyrum L Marshall, professor of physical welfare at the University of Utah School of Medicine, was inducted into the presidency.

Hospital News—Ground was broken for a five story addition to St Marks Hospital, Salt Lake City, September 8. The new wing will increase the number of beds by 75 and will also supply additional operating theaters and service rooms

for the entire hospital, which at present has a capacity of 225 beds. The new addition is expected to cost about \$400,000, \$100,000 of which will be paid by the hospital, the federal government providing the remainder.

WASHINGTON

Personal—Dr Cecil R Fargher, Vancouver, health officer of the Clark County Health Unit, has been named director of health of Tacoma.—Dr Claire W Twinam, acting superintendent of the Lakeville State Sanatorium, Middleboro, Mass., has been appointed medical director of the King County Tuberculosis Hospital.

Spokane Medical Society Named in Affidavit—On September 11 an affidavit was filed in the superior court in Spokane charging members of the Spokane County Medical Association with agreeing not to testify against a fellow member or to cooperate in the preparation of a malpractice suit against a member. According to the Spokane *Spokesman* the affidavit alleged that Dr Clyde W Countryman and all members of the Spokane Medical Association have agreed not to testify against a fellow member. The affidavit is on behalf of Earl H Odson and is based on the death of Mrs Helen Odson in childbirth. The action followed a defense motion for dismissal on the ground that the plaintiff failed to file a bill of particulars for a year, it was stated. The suit asked damages of more than \$50,000.

WEST VIRGINIA

State Society Plans 1944 Meeting—The West Virginia State Medical Association announces that its seventy-seventh annual meeting will be held at the Hotel Windsor, Wheeling, May 15-16, 1944.

Symposium on Obstetrics—The Kanawha Medical Society was host to the sixth councilor district at a symposium on obstetrics in Daniel Boone Hotel, Charleston, October 12. Dr Harry Hudnall Ware Jr, professor of obstetrics at the Medical College of Virginia, Richmond, was the principal speaker on "Management of Breech Presentations" and "Ectopic Pregnancy."

Resolution Stipulates Granting of Temporary Licenses to Practice—On September 30 the council of the West Virginia State Medical Association adopted a resolution recommending to the public health council that it grant temporary permits from one meeting to its next succeeding meeting to such graduates from unrecognized schools as may be necessary to supply areas in which there might exist an acute shortage of doctors, such permits to be issued on the following conditions:

That actual local need be demonstrated to the complete satisfaction of the public health council.

That such graduates of an unrecognized school be given a permit to practice only as an assistant to some individual licensed physician who shall be his sponsor and who shall be responsible for all professional acts of such a graduate.

That he demonstrate to the satisfaction of the public health council his knowledge of all branches of medicine and surgery and proficiency in the use of the English language.

That such applicant for a temporary permit to practice agrees to follow and abide by such restrictions and regulations as the public health council sees proper to impose, and

That in no case whatever shall such license to practice be granted or renewed for a period in excess of six months after the cessation of hostilities.

The resolution reflected the cognizance of the society that there is an insufficient number of physicians in certain communities in the state especially in industrial areas to provide the civilian population with adequate or necessary medical service. Indicating that it does not desire to have the standards for medical licensure set by the public health council lowered for permanent licensure in any manner whatever, the resolution and its recommendations stipulate the basis for utilizing graduates of schools not recognized by West Virginia standards for permanent licensure.

WISCONSIN

Clinic Against Whooping Cough Proposed—Dr Thaddeus D Smith, Neenah, post surgeon, was appointed as chairman of a committee to organize a clinic for immunization against whooping cough at a meeting of the Veterans of Foreign Wars, Nicolet Post 2126, Neenah, September 27.

Personal—On September 17 Acting Governor Goodland appointed Dr Erwin R Schmidt, Madison to the Soldier's Rehabilitation Board to succeed Col William S Middleton, M C, A U S, who is on leave of absence as dean of the University of Wisconsin Medical School, Madison. Dr Schmidt is chief surgeon at the State of Wisconsin General Hospital.

GENERAL

Prizes on Endocrinology—Elizabeth L. Brown, class of 1943 New York Medical College, Flower and Fifth Avenue Hospitals, recently was presented with first prize in the Schering Award Competition for 1942 for her work on "Endocrines and the Nervous System." First prize consists of one full year's tuition. Second prize, consisting of one-half year's tuition, went to Eugene B. Brody, class of 1944, Harvard Medical School, Boston, for his paper on "Hormone Factors in Personality." Third prize of \$100 was given to Roslyn Wiener, class of 1945, University of Michigan Medical School, Ann Arbor, for work entitled "Role of Hormones in Pregnancy and Parturition." The awards were established in 1941 by the Schering Corporation for the best original papers on endocrinology.

Hospital Service Society Sued by Government—On September 17 the government filed a civil suit in district court in Washington, D. C., to declare the charter of the National Hospital Service Society, Inc., forfeited because of alleged violations of the charter terms, according to the *Washington Star*. Under the terms, it was stated, the society was to operate as a "fraternal beneficial association" for the sole benefit of its members. The government has charged the corporation has violated the charter through operating for profit and not for the sole benefit of its members, it was stated. The government also alleged the society has been governed by other than a representative form of government, contrary to the charter. It was also stated that the government had asked the court to appoint a receiver and liquidate the affairs of the corporation, in the interest of some five thousand policyholders, nearly all of whom are in the district, it was stated. The suit claims further that the society operated in Washington without a permit from the superintendent of insurance after May 1, 1940. Filed with the suit is an affidavit to show that the society was unsuccessful in court action to force the superintendent of insurance to issue it a permit after the 1940 date. The society was incorporated in Washington in August 1935, according to the suit.

Accommodations for Cardiac Patients—There are 111 institutions in the United States which accept convalescent cardiac patients, according to an announcement of a survey made by the heart division of the New York Tuberculosis and Health Association. In making the announcement Dr. J. Burns Amberson, president of the New York Tuberculosis and Health Association, said that this is the first national list of such cardiac institutions compiled and that it is considered preliminary since it is believed that there are other institutions accepting cardiac patients which the survey was unable to discover. Of the 111 known institutions, 16 are located in New York State, 2 being in New York City. Illinois stands second with 14, Pennsylvania has 12 cardiac convalescent services, while New Jersey and Massachusetts each have 9. In all there are thirty states and the District of Columbia which have 1 or more institutions for the care of cardiac patients. As a result of the survey the American Heart Association has published a directory listing each of the 111 institutions with their admission requirements, bed capacity, facilities, medical supervision, rates and staff. It lists cardiac convalescent homes for children and adults, general convalescent homes which accept cardiac patients, private schools and camps accepting cardiac patients, facilities for foster home care for cardiac children, and general convalescent homes accepting cardiac children.

The Father of American Pharmacy—The fifth painting in the "Pioneers of American Medicine" series, entitled "The Father of American Pharmacy," will be unveiled during National Pharmacy Week at a meeting in Philadelphia November 5. The painting depicts William Procter Jr. (1817-1872) studying a formula for the standardization of drugs while at work with an assistant in his laboratory. Ivor Griffith, Ph. M., president of the American Pharmaceutical Association and president of the Philadelphia College of Pharmacy and Science, will be the principal speaker at the unveiling. Ensign Melba Grafius of the Waves, stationed at Annapolis, Md., will unveil the painting. She is the fifth youngest woman graduate pharmacist in Pennsylvania, having received her degree in June 1942. The series of "Pioneers of American Medicine" is being executed by Dean Cornwell and financed by John Wyeth and Brother. Other paintings in the series, which are lent to medical schools and medical societies, are "The Dawn of Abdominal Surgery," a tribute to Dr. Ephraim McDowell, depicting the world's first successful ovariectomy, "Beaumont and St. Martin," honoring Dr. William Beaumont, who pioneered in the study of the stomach's digestive functions, "Osler at Old Blockley," in honor of Sir William Osler, pioneer teacher of clinical medicine, and "Conquerors of Yellow Fever," a tribute to Drs. Walter Reed and Carlos Finlay, whose work made possible

construction of the Panama Canal, vital wartime lifeline. Procter graduated at the Philadelphia College of Pharmacy in 1837. He later served as professor there. He edited the *American Journal of Pharmacy* and founded the American Pharmaceutical Association. His chief contribution was the standardization of drugs.

United States and American Republics Exchange Medical Knowledge—Dr. Eugene P. Campbell of the health and sanitation division of the Institute of Inter-American Affairs, Washington, D. C., reports that medical men from the United States are enthusiastic about the training they are receiving in the republics to the south. Dr. Campbell is director of the United States missions assisting Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua in health and sanitation programs. The training program was established by the Association of American Medical Colleges, with the financial support of the John and Mary R. Markle Foundation in New York. When the physicians arrive in Central America they report to the heads of the respective medical missions from the United States. The visiting physicians work on tropical disease cases in hospitals for three weeks. At the end of this period they go out with a field party for a week or ten days, learning more about malaria, dysentery and other tropical diseases. "This program has given our doctors experience they would not obtain elsewhere," said Dr. Campbell. "It has given them something concrete. Many doctors in the United States have had little experience with tropical medicine, and this is a handicap to the Army." Dr. Campbell said that President Tiburcio Carías Andino of Honduras has been especially interested in the program. The exchange of physicians and technicians among the Americas is an important phase of the program of inter-American cooperation which resulted from the conference of American Foreign Ministers at Rio de Janeiro in January 1942. United States physicians who have finished or are receiving training in Central America are:

Dr. Carroll C. L. Birch, assistant professor of medicine, University of Illinois School of Medicine, Chicago, assigned to Golfito, Costa Rica.
Dr. Robert C. Lowe, assistant professor of medicine, Louisiana State University School of Medicine, New Orleans, to Quepos, Costa Rica.
Dr. Walter A. Stryker, instructor of pathology, University of Michigan Medical School, Ann Arbor, to Quepos.
Dr. Elberton J. Tiffany, assistant professor of bacteriology, Long Island College of Medicine, Brooklyn, to Tela, Honduras.
Dr. George T. Harrell Jr., associate professor of preventive medicine, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C., to Tela.
Dr. Roswell D. Johnson, instructor of pediatrics, Yale University School of Medicine, New Haven, Conn., to Tiquisate, Guatemala.
Dr. Robert A. Hettig, instructor of internal medicine, University of Michigan Medical School, to Tiquisate.
Dr. Lemuel W. Diggs, associate professor of medicine, University of Tennessee College of Medicine, Memphis, to Quirigua, Guatemala.
Dr. Thomas H. McGavack, associate professor of medicine, New York Medical College, Flower and Fifth Avenue Hospitals, New York, to Tela.
Dr. William McK. German, assistant professor of pathology, University of Cincinnati College of Medicine, to Tela.
Dr. Floyd J. Florio, associate professor of public health, University of Colorado School of Medicine, Denver, to Quepos.
Dr. Harry F. Dowling, clinical professor of medicine, George Washington University School of Medicine, Washington, D. C., to Quepos.
Dr. Mario Mollari, professor of bacteriology and immunology, Georgetown University School of Medicine, Washington, to Golfito.
Dr. Russell J. Blattner, assistant professor of pediatrics, Washington University School of Medicine, St. Louis, to Tiquisate.
Dr. A. M. Fallis, demonstrator in preventive medicine, University of Toronto Faculty of Medicine, Ontario, to Tiquisate.
Dr. Wesley W. Spink, clinical associate professor of internal medicine, University of Minnesota Medical School, Minneapolis, to Quirigua.
Dr. Thomas P. Almy, instructor of medicine, Cornell University Medical College, New York, to Tela.
Dr. Carlton J. Case, instructor of medicine, University of Virginia Department of Medicine, Charlottesville, to Tela.
Dr. Arthur L. Tatum, professor of pharmacology, University of Wisconsin Medical School, Madison, to Tiquisate.
Leslie C. Saunders, Ph.D., professor of parasitology, University of Saskatchewan School of Medical Sciences, Saskatoon, to Tiquisate.
Dr. Omar J. Fareed Jr., instructor in medicine, University of Chicago School of Medicine, to Quirigua.
Dr. Morris Tager, assistant professor of bacteriology, Yale University School of Medicine, to Quepos.
Dr. Paul A. Lembcke, instructor in medicine, University of Rochester School of Medicine and Dentistry, Rochester, N. Y., to Quepos.
Dr. William W. Frye, associate professor of preventive medicine and public health, Vanderbilt University School of Medicine, Nashville, to Golfito.
Raymond W. Wilhelm, assistant professor of zoology, University of Missouri, Columbia, to Tiquisate.
Dr. Howard B. Shinn, assistant professor of medicine, University of Rochester School of Medicine and Dentistry, to Tiquisate.
Dr. Robert M. Shaw, professor of bacteriology and hygiene, University of Alberta Faculty of Medicine, Edmonton, to Quirigua.
Dr. John W. Scott, associate professor of clinical medicine, University of Alberta Faculty of Medicine, to Tela.
Donald B. McMullen, D.Sc., associate professor of hygiene and public health, University of Oklahoma School of Medicine, Oklahoma City, to Tela.
Francis C. Lawler, professor of bacteriology, University of North Dakota, Grand Forks, to Golfito.
Dr. Henry E. Wilson Jr., associate professor of medicine, Ohio State University College of Medicine, Columbus, to Limon, Costa Rica.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 3, 1943

Psychiatric Battle Casualties

The *Army Medical Department Bulletin* deals with the early recognition and treatment of psychiatric battle casualties. There is no fundamental difference between psychiatric cases arising during a battle and those occurring in civil life, but the former are often more sudden and dramatic. Premonitory symptoms may have been entirely lacking or under the stress of battle may have been unobserved until the breakdown occurs. They are apt to be displayed in a more vivid and spectacular form. Rapid decisions may have to be made by the medical officer in a forward area, on which may depend the morale of a whole unit. Experience in the present war has shown the importance of early treatment. The incidence of psychiatric casualties depends to some extent on the nature of the action, it is likely to be higher during unsuccessful, purely defensive or unduly prolonged actions. A recent analysis of all casualties evacuated from the Libyan battle area showed that 2 per cent were psychiatric and another 8 per cent were cases of physical exhaustion, exhibiting transient neurotic features. The largest proportion of the psychiatric syndromes (60 or 70 per cent) were acute anxiety reactions. Hysterical reactions came next, and other forms of psychosis or neurosis were of less numerical importance. It should be remembered that while the precipitating factor is the actual battle stress, more complex underlying causes may be present. These may lie in the individual or his environment—either in an unstable personality or in faulty morale or discipline.

The development of symptoms may be sudden and dramatic, but closer investigation will often reveal a series of changes which may have been developing over days, weeks or even months. One of the earliest and most typical symptoms is a change in temperament. The quiet retiring individual becomes garrulous and vivacious, or the good humored and sociable man becomes morose and sullen. Increased indulgence in alcohol or tobacco is common. Emotional instability is often manifest—sudden outbursts of weeping without apparent cause or sudden aggressiveness or even violence. Disciplinary offenses may occur in a person of previously exemplary character. There is often deterioration in the standard of work and efficiency. The individual may be irritable and jumpy, unduly startled by a sudden noise. Headache and a wide variety of psychosomatic symptoms may be in evidence.

In prophylaxis, full knowledge of the men in his unit by the medical officer is important, early recognition of the premonitory symptoms may help him to avert a breakdown. Unfortunately he is often confronted with a fully developed case from another unit. Prophylaxis takes three forms. 1 Administrative Training and discipline are of course the responsibility of the combatant officer, but the medical officer may by his advice contribute much of value to the morale of the individual and of the unit. 2 Psychologic. Listening followed by frank discussion with the individual and simple psychotherapy—explanation, reassurance and suggestion—may avert an impending breakdown. 3 Psychic Rest, adequate food and sedatives are important.

It is important to avoid indiscriminate evacuation of personnel to the rear. If a patient can be treated in a forward area the prognosis as a rule is better. But delay in evacuating men for whom specialized treatment in a base area is necessary may prove disastrous to the patient and harmful to the unit. The physically exhausted should be evacuated to a rest camp or casualty clearing station. Treatment on simple lines should

ensure return to duty in a few days. In simple terror states the great majority respond to firm handling with a sedative and restorative hot drinks. If response is delayed, probably the condition is more serious, such as hysteria or a developing anxiety state, and evacuation for more specialized treatment is generally necessary. The main aim is to provide adequate mental and physical rest, for the acute neurosis this is at least as important as for a serious physical wound.

A British Surgeon's Impression of Russian War Surgery

The visit to Russia of a party of British and American surgeons under the auspices of the Medical Research Council has been described in a previous letter to *THE JOURNAL*. One of the members, the orthopedic traumatic surgeon Mr. Watson-Jones, has given his impressions of Russian war surgery in the *British Medical Journal*. The number of women doctors, women surgeons and nurses who work in the front line was remarkable. Not only do nurses attend to the wounded, but in the intervals of battle they build hospitals. They are obviously skilled in the use of the saw, the plane and the spirit level. The closed plaster technique is used for all major wounds, compound fractures and joint injuries. Professor Yudin claims that in the surgery of war this was first practiced over ninety years ago by the Russian surgeon Pirogoff. Yudin teaches that after wound excision no tube or drain should be used and no gauze pack or other foreign body should be inserted. An unpadded plaster cast is applied directly over the wound. A difference from our methods practiced in Russia was of interest. "A large excision of all injured and contused tissues is recommended no matter how many hours or days have elapsed since wounding and independently of the presence and degree of infection." In England it is believed that free excision is indicated only during the first twelve or possibly twenty-four hours and that after that time wide dissection is liable to disseminate infection, we think that the correct treatment in late cases is incision and drainage rather than excision and drainage. Watson-Jones is still unconvinced of the superiority of the Russian method but thinks that further study is necessary.

The visitors did not approve of all they saw. They disagreed on the treatment of frostbite, they were unconvinced of the merits of muds, balsams and wood distillates. They thought that British rehabilitation was better. On the other hand, much of the Russian work was better than ours. Their specialization was excellent, their training of medical students more thorough, their organization of surgical services superb. Each of us could learn from the other.

Marriages

WILLIAM C LONG JR. Lock Haven, Pa. to Miss Geraldine E. Chamberlain of High Bridge, N. J., July 15.

LUTHER H. CONE, Chanute, Kan., to Miss Pamela Van Waeland of Sidney, Australia, June 9.

CLAY R. MILLER, Pensacola, Fla., to Miss Bermetta Helen Loggins in Nashville, Tenn., June.

CLEMENT A. SONES to Mrs. Carroll Browning Martin both of Des Moines, Iowa, September 10.

PAUL F. MANESS to Miss Anne Barrow, both of Jackson, N. C., at Pensacola, Fla., July 28.

PAUL J. STRASSBURGER, New York, to Miss Dora Schurman in Cortland N. Y., August 7.

ROBERT PETTIBONE GILBERT, Chicago, to Miss Anne Heneage of Oak Park Ill., June 5.

WILLIAM HOUSTON PRICE to Miss Helen Callahan both of Los Angeles, June 19.

HENRY D. FREIMAN to Miss Rose Specter both of Philadelphia, April 18.

LOUIS A. LUOCO to Miss Agathia Memoli both of Brooklyn, June 26.

Deaths

Leo Buerger * New York, Columbia University College of Physicians and Surgeons, New York, 1901, professor of urologic surgery at the New York Polyclinic Medical School and Hospital in 1917, formerly professor of surgery (urology) at the College of Medical Evangelists, Loma Linda and Los Angeles, member of the American Urological Association and the American Association of Pathologists and Bacteriologists, fellow of the American College of Surgeons, voluntary assistant at the Breslau Surgical Clinic in Germany, 1905-1906, for many years on the staff of Mount Sinai Hospital, attending surgeon to the Beth David and Bronx hospitals, consultant in the genitourinary department, Israel Zion Hospital, Brooklyn, and attending urologist to the Wyckoff Heights Hospital, Brooklyn, discovered Buerger's disease (thromboangitis obliterans) in 1908 and in the same year assisted in the development of the Brown-Buerger cystoscope, devised an operating cystoscope in 1910, the cystourethroscope and other urologic instruments, author of "Circulatory Disturbances of the Extremities", aged 64, died, October 6

Henry Gray Barbour * New Haven, Conn. Johns Hopkins University School of Medicine, Baltimore, 1910, assistant professor of pharmacology at Yale University School of Medicine from 1912 to 1921, associate professor of pharmacology and toxicology from 1931 to 1937 and since 1937 research associate professor, professor of pharmacology at McGill University Faculty of Medicine, Montreal, Que., Canada, from 1921 to 1923 and professor of physiology and pharmacology at the University of Louisville (Ky.) School of Medicine from 1923 to 1931, an Associate Fellow of the American Medical Association, member of the Central Society for Clinical Research, American Physiological Society, Society of Pharmacology and Experimental Therapeutics, American Society of Biological Chemists and the Society of Experimental Biology and Medicine, conducted gas investigations for the United States government during World War I, author of "Experimental Pharmacology and Toxicology", aged 57, died, September 23, of acute pulmonary edema and hypertensive heart disease

William Henry Lohman * Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1904, professor of clinical medicine at the Long Island College of Medicine, where he had been instructor of physical diagnosis from 1908 to 1911, specialist certified by the American Board of Internal Medicine, fellow of the American College of Physicians, lieutenant in the medical corps of the U. S. Navy from 1917 to 1919, chief of the medical service, Camp Hospital number 15, American Expeditionary Forces, 1917-1918, chief of the medical service, Navy Base Hospital number 1 at Brest, France, 1918-1919, recently helped to organize Army General Hospital number 79, attending physician at the Brooklyn Thoracic Hospital from 1908 to 1910 and physician in chief from 1911 to 1916, attending physician since 1925 at the Brooklyn Hospital, assistant attending physician at St. John's Hospital from 1920 to 1930 and consulting physician since 1930, medical inspector, department of health of New York City, from 1907 to 1911, aged 62, died, August 8

Max Joseph Exner * Newark, N. J., University Medical College of Kansas City, Mo., 1906, an Associate Fellow of the American Medical Association, epidemiologist and director of venereal disease for the city department of health, physical director for Carleton College, Northfield, Minn., from 1892 to 1898, the Y. M. C. A., in Troy, N. Y., 1898-1899, in Kansas City, Mo., from 1899 to 1908 and in China from 1908 to 1911, director of sex education for the International Committee of the Y. M. C. A., from 1911 to 1920, consultant and for many years director of the educational division of the American Social Hygiene Association, during World War I in charge of social hygiene education for the U. S. Army, cooperating with the war department commission on training camp activities, author of "Rational Sex Life for Men" and "Sexual Side of Marriage", aged 72, died in the Presbyterian Hospital, October 8

Julian Mast Wolfsohn * San Francisco, John Hopkins University School of Medicine, Baltimore, 1911, clinical professor of medicine (neuropsychiatry), Stanford University School of Medicine, specialist certified by the American Board of Psychiatry and Neurology, Inc., member of the American Neurological Association and the American Psychiatric Association,

fellow of the American College of Physicians, served during World War I, chief medical director of the Alexander Sanitarium, Belmont, consultant in neuropsychiatry at the Children's Hospital, Mount Zion Hospital, San Francisco Hospital and the Veterans Administration Facility, member of the psychiatric board of the United States Penitentiary Hospital, Alcatraz, aged 60, died in Stanford University Hospitals July 1, following an operation for intestinal obstruction

Louis Thales Hess * Colonel, U. S. Army, retired, Columbus, Ohio, Jefferson Medical College of Philadelphia, 1895, entered the medical corps of the U. S. Army as an assistant surgeon in 1899, rose through the various grades to that of colonel in 1918, retired in 1931 at his own request after thirty-two years' service, served for two years in Cuba during the American occupation and in 1902 was sent to the Philippines for three years, during World War I was chief of the medical service of the National Guards units in the militia bureau in Washington, D. C., for four years superintendent of the Ancon Hospital, now Gorgas Hospital in Panama, from 1923 to 1931 was stationed at Columbus as Fifth Corps area surgeon, fellow of the American College of Surgeons, aged 72, died, July 27, of arteriosclerosis

George Huston Bell * New York, University of Virginia Department of Medicine, Charlottesville, 1897, an Affiliate Fellow of the American Medical Association, member of the American Ophthalmological Society, past president of the New York Ophthalmological Society, fellow of the American College of Surgeons, a specialist certified by the American Board of Ophthalmology, served as eye consultant for the U. S. Public Health Service, consulting ophthalmic surgeon to the New York Eye and Ear Infirmary, consulting ophthalmologist to St. Andrew's Convalescent Hospital and the New York Polyclinic Medical School and Hospital, visiting ophthalmic surgeon to the U. S. Marine Hospital, aged 77, died, October 5, of heart disease

Burton Alexander Hall * Oxford, N. Y., Syracuse University College of Medicine, 1907, president and for many years a member of the board of education, past president of the Chenango County Medical Society, served overseas in the medical corps of the U. S. Army during World War I, for many years served as health officer of Oxford, member of the staff of the Chenango Memorial Hospital, Norwich, consultant physician on the staff of the Woman's Relief Corps Home, member of the board of managers of Brookside Crest Sanitarium, Sherburne, a director of the National Bank of Oxford, a charter member of the Oxford Rotary Club and past president, aged 62, died, July 24, of cerebral hemorrhage and chronic cardiovascular renal disease

Frederick Calhoun Bugbee, Tucson, Ariz., Jefferson Medical College of Philadelphia, 1925, member of the Arizona State Medical Association, diplomate of the National Board of Medical Examiners, captain in the medical reserve corps, U. S. Army, not on active duty, at one time member of the Verona (N. J.) Council and served as chairman of the fire and police committees, formerly on the staffs of the Essex Mountain Sanatorium, Verona, Orange Memorial Hospital and the Montclair Community Hospital, all of New Jersey, served on the staffs of the Comstock Children's, Pima County and St. Mary's hospitals, affiliated with the Hicks-Bugbee Clinic, aged 44, died, July 25, of asthma

Ralph Kinsey Updegraff Sr., Cleveland, University of Wooster Medical Department, Cleveland, 1902, specialist certified by the American Board of Internal Medicine, past president of the Academy of Medicine of Cleveland, member of the Ohio State Medical Association and formerly counselor of the Fifth District, fellow of the American College of Physicians, formerly instructor and associate in physical diagnosis at Western Reserve University School of Medicine, director of medicine at St. John's Hospital for twenty-five years, served on the staffs of the City and St. Luke's hospitals, aged 70, died in Wilmington, Del., July 13, of coronary occlusion

Thomas Maximus Rivers * Kissimmee, Fla., Medical College of the State of South Carolina, Charleston, 1900, past president of the Midland Medical Society and the Orange County Medical Society, served as health officer of Kissimmee and of Osceola County for many years, recently served as chairman of the health and housing unit under the Osceola County Defense Council, member of the Southern Medical Association and the Florida Railway Surgeons Association, on the staff of the Osceola Hospital, author of "The Autonomic Diseases or the Rheumatic Syndrome", aged 74, died, July 27, of coronary thrombosis

John Bapst Blake, Brattleboro Vt., Harvard Medical School, Boston 1891 member of the Massachusetts Medical Society, American Surgical Association New England Surgical Society Boston Obstetrical Society, Boston Medical Library Association and the American Gastro-Enterological Association fellow of the American College of Surgeons, formerly assistant professor of surgery at his alma mater and the graduate school, served for many years on the staffs of the Boston City, Long Island and Massachusetts General hospitals, Boston, co author of "Case Teaching in Surgery" aged 77, died August 17, of chronic myocarditis and arteriosclerosis

George Goodhue Kineon, Gallipolis Ohio, Miami Medical College, Cincinnati 1905 member of the Ohio State Medical Association, American Psychiatric Association, National Association for the Study of Epilepsy American Association for the Study of the Feeble Minded Eugenic Research Association and the International League Against Epilepsy chairman of the Gallia County American Red Cross and the county draft board during World War I served as judge of the Court of Honor of the Boy Scouts of America, medical director and superintendent of the Ohio Hospital for Epileptics since 1911 aged 64, died August 21, of heart disease

Howard Gregory Case Φ Syracuse N Y Syracuse University College of Medicine 1903 associate professor of clinical surgery at his alma mater where he had been demonstrator of anatomy instructor in anatomy and applied anatomy and associate professor of surgery specialist certified by the American Board of Surgery and a member of the founders group president of the board of trustees of the Cazenovia (N Y) Seminary served on the staffs of the Syracuse Free Dispensary and the Hospital of the Good Shepherd Syracuse University where he died, August 4, of coronary thrombosis aged 62

Walter Elijah Bostwick, Algonac Mich McGill University Faculty of Medicine Montreal Que, Canada 1893 served in the medical corps of the U S Army during World War I for many years served as health officer of Clay Township and as treasurer of the school board for twenty five years chairman of the Clay Township unit of the St. Clair County chapter American Red Cross formerly United States deputy collector of customs for several years a member of the village council a director of the Algonac Savings Bank aged 77 died in the Harper Hospital Detroit, August 3 of pneumonia

George Hamilton Walker Φ Winona Minn University of Minnesota College of Medicine and Surgery Minneapolis 1908, specialist certified by the American Board of Otolaryngology member of the American Academy of Ophthalmology and Otolaryngology and the Minneapolis Otolaryngology and Ophthalmology Association fellow of the American College of Surgeons member of the Winona Clinic for many years affiliated with the Miller Clinic St Paul from 1922 to 1926 aged 63, on the staff of the Winona General Hospital, where he died July 2 of cerebral hemorrhage

Edgar F Dodds Φ Tacoma Wash Northwestern University Medical School Chicago 1897 past president of the Pierce County Medical Society, served in France and as a captain in the medical corps of the U S Army during World War I fellow of the American College of Surgeons chairman of the Tacoma Orthopedic Clinic consultant on the staff of the Northern Pacific Beneficial Association Hospital on the staffs of St. Joseph's Hospital and the Tacoma General Hospital where he died July 23, of pernicious anemia and Hodgkin's disease aged 71

Ray Clifton Gabler, Chambersburg Pa Hahnemann Medical College and Hospital of Philadelphia, 1932 member of the Medical Society of the State of Pennsylvania on the staff of the Chambersburg Hospital began active duty as a captain in the medical corps of the Army of the United States in November 1942 attached to the Air Corps Officers Training School at Miami Beach, Fla relieved from active duty in June 1943 honorably discharged in July 1943 an account of physical disability, aged 39, died August 6 of a self-inflicted bullet wound

Joseph W Albright, Elizabethtown, Pa University of Pennsylvania Department of Medicine Philadelphia 1879 member and for two terms vice president of the Medical Society of the State of Pennsylvania president of the Lycoming County Medical Society in 1894 and 1901 and formerly vice president served as president of the board of health of Muncy, formerly a member of the staff of the Muncy Valley Hospital aged 86, died in the Philadelphia Freemasons Memorial Hospital Masonic Homes, August 5, of chronic valvular heart disease

Clyde Rolland Bennett, Half Moon Bay, Calif, University of Nebraska College of Medicine, Omaha 1928 member of the American Psychiatric Association aged 43, died August 11

Gabriel D Bos Φ Holland, Mich, Detroit College of Medicine and Surgery, 1920, on the staff of the Holland City Hospital, aged 55, died, August 14, of coronary occlusion

Harry S Bossart, Buckley, Ill, Jefferson Medical College of Philadelphia, 1886, also a pharmacist, for twenty-six years mayor of Buckley, formerly a member of the school board, for many years surgeon for the Illinois Central Railroad aged 78, died, August 15, of cerebral hemorrhage

Arthur J Bradbury, Old Town, Maine University of Vermont College of Medicine, Burlington, 1892 past president of the Penobscot County Medical Society, served as mayor and as city and school physician, aged 76, died, August 7, of heart disease

Ralph Waddell Brown, Roanoke, Va., University of the City of New York Medical Department, New York, 1889 member of the Medical Society of Virginia, past president of the Roanoke Academy of Medicine served during World War I, aged 76, served on the staff of the Jefferson Hospital, where he died, August 9, of heart disease

Melchor Gist Cockey, Salina, Kan, University of Maryland School of Medicine, Baltimore, 1879 served in Cuba during the Spanish-American War and in China during the Boxer rebellion, formerly a captain in the Kansas National Guard, aged 90, died in Kansas City, Mo, August 1, of empyema following pneumonia

Frank Smith Collier, Vicksburg, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887, served during World War I president of the village for one term aged 79 died in a Kalamazoo hospital, August 9, of myocarditis and myocardial degeneration

William Franklin Cope, Easton Pa Jefferson Medical College of Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, served during World War I chief of the ophthalmology department, Easton Hospital, a director of the First National Bank, aged 64 died in the Cornell Medical Center New York August 17, of coronary disease

Charles Smith Craig Φ Hilton, N Y, University of Buffalo School of Medicine 1897 served as health officer of the town of Parma on the staff of the Brockport General Hospital, formerly examiner for several insurance companies aged 71, died in St Mary's Hospital, Rochester, August 15 of coronary thrombosis

Norman Wilbur Currie Φ Plainfield N J University of the City of New York Medical Department, 1895 fellow of the American College of Surgeons served during World War I, aged 71 on the staff of the Muhlenberg Hospital where he died August 1 of heart disease and cerebral hemorrhage.

Matthew Hasbrouck Du Bois, Washingtonville, N Y Bellevue Hospital Medical College, New York, 1894, member of the Medical Society of the State of New York on the courtesy staffs of St. Luke's Hospital, Newburgh and the Cornwall (N Y) Hospital, where he died August 8 of coronary thrombosis aged 71

Leo Huggins Du Bose, Great Falls S C University of Georgia Medical Department, Augusta 1912 also a druggist, aged 55 died, August 13, of a self-inflicted bullet wound

Calvin A Eaton, Yuma, Ariz Chicago Medical School, 1927 member of the Arizona State Medical Association, served as city health officer, aged 45 died in the Yuma County General Hospital, August 2 of pulmonary embolism

Erastus Mickel Finch, Takoma Park, Md National University Medical Department Washington, D C 1902 also a lawyer for many years chief of the medical division of the bureau of pensions and later assistant medical referee formerly justice of the peace, aged 88 died August 18 of cerebral hemorrhage cerebral accident arteriosclerosis and hypertension

Aaron Glass, New Haven Conn St Louis College of Physicians and Surgeons and the Kansas City College of Medicine and Surgery 1922 aged 54 died suddenly, August 2

William Emmett Ham, Beattie, Kan Rush Medical College, Chicago 1882 member of the Kansas Medical Society served as mayor, councilman member of the school board of district number 29 and postmaster, aged 85 died in the Randell Hospital Marysville, July 30

Clara Addleman Hooper, Glen Arbor Mich Bennett Medical College, Chicago 1913, aged 73 died in the James Decker Munson Hospital, Traverse City July 26, of cerebral hemorrhage.

Everett Dennison Hooper, Boston College of Physicians and Surgeons Boston, 1891, aged 74, died, June 1

Y Frank Hopkins ♂ Taylor, Texas, Kentucky School of Medicine, Louisville, 1901, served during World War I, on the staff of the Wedemeyer Hospital, served as president and director of the Kiwanis Club, aged 66, died, July 19, of carcinoma of the colon

Maximilian R Horwitz, St Louis, Missouri Medical College, St Louis, 1893, formerly on the staff of the Missouri Baptist Hospital, aged 72, died, July 29, of heart disease

Thomas L Howard, Augusta, Ga, University of Georgia Medical Department, Augusta, 1908, also a pharmacist, at one time trustee from the 119th district, aged 64, died, July 28, of heart disease

George Frederick Hughes Jr, Somerville, Mass, Tufts College Medical School, Boston, 1900, aged 71, died, June 3, of cerebral hemorrhage with hypostatic pneumonia

Herbert Wellington Insley, Chanute, Kan, University Medical College of Kansas City, Mo, 1913, member of the Kansas Medical Society, served in France during World War I, aged 61, died, July 16

Alton Atwell Jackson, Everett, Mass, Harvard Medical School, Boston, 1883, member of the Massachusetts Medical Society, member of the Selective Service Board during World War I, on the staff of the Whidden Memorial Hospital, aged 89, died, July 26, of pneumonia

Charles Albert Jenkins, Willimantic, Conn, Baltimore Medical College, 1911, member of the Connecticut State Medical Society, served as health officer of Willimantic, served in France during World War I, at one time trustee of the Norwich State Hospital, aged 55, died in the Windham Community Memorial Hospital, July 24

Edgar Augustus Jones, Avant, Okla, Vanderbilt University School of Medicine, Nashville, Tenn, 1885, member of the Oklahoma State Medical Association, served during World War I, aged 82, died in the Veterans Administration Facility, Muskogee, July 15, of cerebral hemorrhage

William Frederick Kaiser ♂ Portland, Ore, University of Oregon Medical School, Portland, 1908, recently on the staff of the Portland induction center, aged 63, died in the Providence Hospital, July 8

George L Kearney, St Louis, Missouri Medical College, St. Louis, 1891, formerly on the staff of the City Sanitarium, aged 79, died, August 5, of myocarditis

William R Kennedy, Wauwatosa, Wis, State University of Iowa College of Homeopathic Medicine, Iowa City, 1895, member of the State Medical Society of Wisconsin, on the staff of St Luke's Hospital, Milwaukee, aged 71, died in St Mary's Hospital, Milwaukee, August 3, of diverticulosis of the colon

John Francis Kent, Brooklyn, Bellevue Hospital Medical College, New York, 1888, member of the Medical Society of the State of New York, served as medical inspector of schools for the department of health, aged 78, died in the Kings County Hospital, August 1, of arteriosclerosis and papilloma of the bladder

Ralph Porter Kent ♂ Attleboro, Mass, Harvard Medical School, Boston, 1904, served as health officer of Attleboro, member of the staff of the Sturdy Memorial Hospital, aged 63, died in Oak Bluffs, August 4, of cerebral hemorrhage

James Silas Kolb, Clarksville, Ark, University of Arkansas School of Medicine, Little Rock, 1892, member of the Arkansas Medical Society, past president of the Johnson County Medical Society, on the staff of St Hildegard's Municipal Hospital, aged 78, died, August 9, of thromboangitis obliterans of the left leg

Siegfried Kraft ♂ Sheboygan, Wis, Leopold-Franzens-Universität Medizinische Fakultät, Innsbruck, Austria, 1909, member of the staff of the Sheboygan Memorial Hospital, dermatologist and urologist to the Sheboygan Clinic, aged 60, died, August 3, of bronchiogenic carcinoma of the lung

John William Krohn ♂ Joliet, Ill, the Hahnemann Medical College and Hospital, Chicago, 1912, fellow of the American College of Surgeons, formerly state surgeon, served in France

during World War I, member of the Selective Service System, on the staff of St Joseph's Hospital, active executive chairman and formerly chief of staff at the Silver Cross Hospital, where he died, August 21, of lobar pneumonia and coronary thrombosis, aged 52

Bernard John Lammers, Louisville, Ky, Louisville Medical College, 1890, aged 81, served on the staff of St Anthony's Hospital, where he died, August 2, of pernicious anemia and myocarditis

Nicholson Chambers Lanier, New Orleans, Medical Department of Tulane University of Louisiana, New Orleans, 1895, aged 77, died in the Charity Hospital, July 18, of malnutrition and anemia

David William Medill, Martins Ferry, Ohio, Colorado School of Medicine, Boulder, 1896, also a pharmacist, aged 71, died, July 28

Amherst Merriman, La Jolla, Calif, Detroit College of Medicine and Surgery, 1921, member of the Colorado State Medical Society, aged 46, died in Ramona, July 30, of acromegaly

Marion Lexter Montgomery, Louisville, Miss, Mississippi Medical College, Meridian, 1910, member of the Mississippi State Medical Association, health officer of Winston County, member of the Rotary Club, aged 61, died in Memphis, Tenn, August 10, of coronary heart disease

Albert Augustus Parker ♂ Pocomoke City, Md, College of Physicians and Surgeons, Baltimore, 1909, a charter member and first president of the Rotary Club of Pocomoke City, aged 58, died in Dr Harvey Beck's Clinic, Baltimore, August 3, of coronary thrombosis

James Haven Pond, Los Gatos, Calif, Oakland College of Medicine and Surgery, 1910, a director of the First National Bank of Los Gatos, aged 80, died, August 6, of arteriosclerotic heart disease and coronary occlusion

Albert Alexander Potterf, Lenexa, Kan, Homeopathic Medical College of Missouri, St Louis, 1888, aged 91, died, July 16, of lobar pneumonia

Ira W Robertson, Tulsa, Okla, Memphis (Tenn) Hospital Medical College 1901, formerly owner of a hospital in Henryetta, aged 74, died, July 30

John Ansel Schoonover ♂ Denver, University of Cincinnati College of Medicine, 1925, assistant professor of pediatrics at the University of Colorado School of Medicine, specialist certified by the American Board of Pediatrics, Inc, member of the American Academy of Pediatrics, served as president of the medical staff of the Children's Hospital, where he died,

July 13, of uremia, polycystic kidneys and a fractured scapula, aged 43

Thomas Campbell Sexton, Fremont, Neb, Washington University School of Medicine, Baltimore, 1871, Civil War veteran, aged 99, died, July 28, of coronary thrombosis

Alfred Joy Willits, Anaconda, Mont, Northwestern University Medical School, Chicago, 1900, member of the Medical Association of Montana, fellow of the American College of Surgeons, clinical assistant in medicine from 1908 to 1912 and clinical assistant in surgery at his alma mater from 1912 to 1914, for twenty-three years chief of staff of St Ann's Hospital, aged 68, died, July 26, of heart disease

KILLED IN ACTION

Edward Ellsworth Evans ♂ Surgeon Lieutenant Commander, U S Navy, San Francisco, University of Oregon Medical School, Portland, 1928, entered the U S Navy in June 1928 as an assistant surgeon, lieutenant junior grade, Evans Avenue on the reservation of the new U S Naval Hospital, Dublin, Ga, named in his honor by the Bureau of Medicine and Surgery, aged 43, was killed in action in the Solomon Islands, Dec 12, 1942



LIEUT COMDR EDWARD E EVANS,
M C, U S N, 1899-1942

Correspondence

EVALUATION OF ALBUMINURIA

To the Editor —In THE JOURNAL August 14, page 1151, a clinical pathologist for an army induction team described his difficulties in knowing when to reject a man with albuminuria. At one army induction station, during the course of a study (to be published) on several aspects of albuminuria in March and April 1943, we formulated a series of rules to aid the examining physicians in evaluating the albuminuria cases. We have found them to be applicable to practically all questions regarding the significance of albuminuria that arise in connection with the processing of large numbers of men in a short period of time.

DIRECTIONS FOR DETERMINING SIGNIFICANCE OF ALBUMINURIA IN SELECTEE'S

1 All albuminuria cases except (a) those definitely rejected on other grounds and (b) those whose albuminuria clears with the second test, are studied by a special method.

2 When albumin is found in the first two urines, the selectee is given a printed form by the laboratory with orders to return as soon as possible for additional urine examinations. He is also advised to restrict the intake of fluids.

3 On his return the selectee assumes the prone position on an examining table in one of the cubicles. A urine is collected at the end of half an hour and at the end of one and one half hours, these samples are voided while the selectee is still in the recumbent position.

4 The results of the urine examinations are recorded by the laboratory on a special form, which is then attached to the record of the selectee. On this special form are written

Name	Date	Albumin	Initials
Urine No			
1			
2			
3			
After ½ hour recumbency			
After 1½ hours recumbency			
If rejected state diagnosis			
This slip is to be kept by the Medical Officer			

INTERPRETATION OF RESULTS OF URINE TESTS

5 If the last two or more urines are negative for albumin, the case is one of transient albuminuria and the man should be accepted.

6 If the last urine (which is the second voided in the recumbent position) is negative for albumin the case is one of orthostatic albuminuria and the man should be accepted if no more than a rare cast or red or white cell is found on only one of several observations.

7 If albumin persists in all urines, the following inquiries should be made:

- Presence of urinary symptoms (such as frequency, nocturia, hematuria, pyuria and pain)
- Previous rejections here
- History of albuminuria or edema
- Previous diagnosis of kidney disease.
- Upper respiratory infections (present or very recent)
- Moderate intake of alcohol previously
- Sexual intercourse or masturbation the night before examination
- History of gonorrhea

8 If a definite diagnosis of chronic kidney disease can be made on the basis of answers to the questions, the persistence of albuminuria and the findings in the sediment the man should be rejected.

9 If a definite diagnosis cannot be made, the man should be deferred for two months. At that time urines will be examined again and a final decision made, unless a factor that may produce temporary albuminuria (such as colds or alcoholism) is present, in which case the selectee should again be deferred. If there is no such factor, and the albuminuria is persistent, then the man should be rejected on the basis of persistent albuminuria.

10 All pertinent information obtained in section 7 should be recorded on the back of the work sheet.

The terms transient, orthostatic or persistent albuminuria are used to describe the several varieties encountered. Men who show persistent albuminuria should be rejected because they are the ones with overt or insidious renal disease (Derow, H. A. The Diagnostic Value of Serial Measurements of Albuminuria in Ambulatory Patients, *New England J Med* 227 827 [Nov 26] 1942; Young, H. H., Haines, J. S., and Prince, C. L. Orthostatic Albuminuria. The Importance of Its Recognition by Medical Examining Boards, *Mil Surgeon* 92 353 [April] 1943).

HARRY A. DEROW, M.D.
LAWRENCE I. STELLAR, M.D.
Boston

WOUND HEALING AND IMPLANTATION OF SULFONAMIDES

To the Editor —In the August 7 issue of THE JOURNAL in the article on "Wound Healing and Infection After Local Implantation of Sulfonamide Powder," by J. Albert Key, mention is made of an earlier paper of mine. I believe it would be well if I answered certain of the observations.

Late in 1942 I published further observations in the *Journal of Bone and Joint Surgery* in which I pointed out that, among other things, larger amounts of sulfonamides were used topically in the earlier months than were necessary and that after the publication of my first report I began using smaller quantities. However, I feel that the larger amounts were not the only retarding factor in wound healing, that the application of the drug to the cutaneous edges of the wound was, if anything, more disadvantageous. Since my first publication I have used sulfamilamide topically in well over 400 cases of all types—clean, infected, lacerated and other traumatic wounds, and in surgical incisions. I am fully convinced as I have been from the start, of its protective and therapeutic effects. But I place it deep in the wound, and if I do place it subcutaneously I keep it away from the skin edges. By attending to these two factors distribution and quantity I believe I have avoided any retardation of healing. May I add that the quantities used previous to my first report, and on which that report was based, were the quantities currently used at that time. If my memory serves me right and I do not have any reference material at hand, Dr. Key shortly after that publication, or at about that time, was advocating lesser quantities of the drug than had been used.

The material which I am now seeing at rather close quarters has increased my belief in the efficiency of sulfonamides used topically. I am not yet ready to publish any data because I use it on all casualties, since my faith in it forbids me to withhold it from any. Since my later publication (*J Bone & Joint Surg* 24 937 [Oct] 1942) has already noted these changes it would be too bad if an earlier observation in any way dissuaded surgeons from its use. I believe that even there I stated that its use had become obligatory in any case of potential infection.

EDGAR M. BICK, Major, M.C., U.S.

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Smallpox Vaccine in Aphthous Ulcers—Grace employed repeated inoculations of smallpox vaccine in 2 cases of aphthous ulcers on the assumption that the condition is probably caused by a virus akin to that of herpes simplex, a disease which, when recurrent, is frequently controlled by such treatment. In both cases the disease had been unaffected by local applications of caustic materials or by the use of diets or vitamins. Great improvement occurred in the 2 cases.

Archives of Internal Medicine, Chicago**72 147-300 (Aug) 1943**

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- Estrogen, Diabetes and Menopause S Gitlow and D M Kurschner —p 250
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Comparative Value of Digitalis and Ouabain—Digitalis and ouabain have similar but not identical action on the decompensated heart. Digitalis exerts a more pronounced effect on the functions of sinus excitation and the auriculoventricular

conduction, which it depresses, ouabain, on the contrary, acts primarily on the contractility and tonicity, which it stimulates. Digitalis chiefly affects the differentiated, neuromuscular tissue of the heart, ouabain the undifferentiated, contractile fibers of the myocardium. Digitalis administered by the oral route fixes itself slowly on the heart, ouabain administered intravenously acts rapidly. The maximum effect of digitalis is reached in two or three days, that of ouabain in one or two hours. Digitalis accumulates, ouabain does not. On discontinuance of the drug, digitalis extends its effect over a period of several days, up to eight or ten, the effect of ouabain disappears in twenty-four to thirty-six hours. The proper fields for digitalis are the congestive heart failure with tachycardia and especially with auricular fibrillation, fibrillation even in the absence of heart failure and long sustaining treatment of patients with slightly decompensated heart disease. The proper indications for exhibition of ouabain are the acute failure of the left ventricle and chronic failure of the left side of the heart in patients with vascular disease, such as coronary arteriosclerosis, hypertension and syphilitic aortitis. The author recommends one intravenous injection daily of 0.25 mg in a series of six doses and more according to the tolerance of the patient and the clinical improvement obtained. In thousand of patients treated over a period of twenty years he has not encountered a single death attributable to the drug.

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California and Western Medicine, San Francisco**59 1-104 (July) 1943**

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- *Welding Fumes and Gases Their Effect on Health of Worker J Brodie —p 13
- Health Control in Welding P Drinker —p 18
- Medical Service in U S S R Army C L Rubenstein —p 21
- Nerves of Arm Some of Their Affections, Their Diagnosis R Wartenberg —p 22

Welding and Health of Worker—According to Brodie the intense ultraviolet rays at the welding arc may produce eye flashes. The arc is also responsible for the nitrous fumes. Another source of danger involves the particulate fumes of iron, manganese, chromium, cadmium, nickel, zinc and magnesium. Other hazards are from fluorides, silicates, varnish, rubber and other substances. There is also oxygen deficiency if the welding is done in a confined space. In cutting galvanized pipes or welding sheets with the electric arc or acetylene torch, some operators will develop metal fume fever because the galvanized coating contains over 95 per cent zinc. A typical attack begins after the man has left his work, i e several hours after exposure to the fumes. Sometimes during work he may notice a metallic taste and a dryness in the throat, or nausea and tightness in the chest. After going to sleep he awakens with a chill, feels feverish and breaks out in perspiration. His temperature is between 100 and 102 F. Such an attack lasts twenty-four to forty-eight hours. These workers often develop a certain resistance. Out of 100 workers exposed to galvanized fumes, about 75 do not suffer at all, about 20 have chills occasionally, and only 5 have frequent attacks. Nitrous gases are responsible for a local reaction in the lungs which may be serious and even lead to death. After exposure to the welding gases the worker has an acid taste in his mouth and begins to cough. If he then

goes out into the fresh air, his condition may improve considerably, but five or six hours later the cough returns in a more intensive form with shortness of breath, cyanosis and a feeling of pressure in the chest. This may be followed by acute pulmonary edema with profuse expectoration of frothy, yellowish or pinkish fluid. Heart failure and death may follow in forty-eight hours. If the amount of nitrous gases inhaled is smaller, the patient may develop, not pulmonary edema but pneumonia or acute bronchitis. Welding is not a hazardous occupation provided the concentration of fumes is kept at a low level. Although after many years of welding the lungs may show certain fibrotic or nodular changes which in an x-ray film may remind one of early silicosis there is neither the shortness of breath nor the tendency to tuberculosis which is seen in silicosis. It is important that the physician realize the essential harmlessness of these so-called spots on the lungs, so that he may be able to explain away the fears of his patient and reassure him.

Canadian Medical Association Journal, Montreal

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Analysis of Gastric and Duodenal Ulcers in Vancouver General Hospital C J F Phillips-Wolfe—p 113
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Recurring Vesicular Eruptions of Hands—Davidson and Birt discuss the various types of recurring vesicular eruptions of the hands and present a classification based on the causative agent, which may act directly or from a distance. A survey was made of the records of the last 200 patients in whom the chief complaint was an eruption localized mainly to the hands and featured by the presence of vesicles. *Dermatitis venenata* accounted for three fourths of all the cases. If this group characterized by acute inflammatory reaction is excluded, the relative importance of the other conditions becomes evident. More than half of the remaining cases were diagnosed as cheiropompholyx and only about one third were dermatophytids. Because of the relatively high incidence of cheiropompholyx found here, an additional 134 cases were included from the records, making a total of 175 patients with cheiropompholyx. Cheiropompholyx occurred about evenly in the two sexes, was commonest in the third and fourth decades of life most often affected those engaged in white collar occupations and appeared chiefly in hot weather. Many of these patients had hyperhidrosis of the hands and feet, and outbreaks were often associated with nervous strain. It would seem that there is ample justification for such a diagnosis as cheiropompholyx that it can occur in the absence of mycotic infection, that there are probably constitutional reasons for the attacks and that the attacks are dependent to some extent on the weather. It is suggested that the incidence of dermatophytids recorded may depend to some extent on the interpretation given to the so-called mosaic fungus. This fungus is commonly found on microscopic examination of scrapings taken from the feet and mounted in potash. It is in reality not a fungus but is formed by flat rhombic crystals of cholesterol. It is possible that the interpretation given to the presence of the mosaic may account for some of the conflicting opinions regarding the part played by fungi in the production of vesicular eruptions of the hands.

Endocrinology, Springfield, Ill

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Illinois Medical Journal, Chicago

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Journal of Nervous and Mental Disease, New York

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Environmental and Hereditary in Light of Modern Biology Critical Review B Karpman—p 154
Introduction to Growth Concept of Nervous Integration (Application to Psychiatric Disease Schizophrenia and to a Somatic Disease Renal Hypertension) D E Schneider—p 164

Electric Shock Therapy in Psychoses—Epstein records observations on electric shock treatments administered to 100 patients, of whom 37 had manic depressive insanity, 37 dementia precox, 16 involutional psychoses and 10 undifferentiated psychoses. The ages of the patients varied between 16 and 73 years. He conceives of electric shock as a mass irritation or stimulation to the cerebrum, the intensity of the reaction being somewhat proportionate to the amount and force of the current. Irritation of the autonomic nervous system is expressed by changes in the size and reaction of the pupils, rate and rhythm of the heart, blood pressure, respiration, sweating and the like. Motor irritation is expressed through muscular movements, changes in reflexes, and signs of pyramidal tract irritation. Mental reactions are in the nature of confusion, disorientation and amnesic or aphasic states. When the mass irritation is at its maximum, a convulsion is associated with these phenomena. The author empirically designated the degree of the reaction in terms of from 1+ to 4+++. The 1+ is the mildest type of petit mal response and 4+++ is a severe convulsion associated with prolonged apnea and frequent cardiac standstill. Convulsive reactions are most desirable for treatment purposes but 3+ petit mal reactions can be satisfactorily utilized in certain instances. Patients with manic depressive insanity and those with involutional melancholia responded best to electric shock treatment. Dementia precox and mixed psychoses in which paranoid and delusional trends predominated responded poorly. When the duration of the illness was less than six months the general outlook for improvement or recovery was better irrespective of the type of psychosis. Electroconvulsive shock is more easily administered and less hazardous than insulin or metrazol.

Journal Neuropath and Exper. Neurology, Baltimore

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- Innervation of Blood Vessels of Rabbit's Iris O R Langworthy and L Ortega —p 277
- *Landry's Paralysis Its Clinical and Pathologic Features G B Hassin —p 293
- Cerebral Vascular Changes Associated with Azosulfamide and Sulfamethylthiazole Therapy I M Scheinker —p 301
- Cerebral Patchy Demyelination Case Report E K Holt Jr and C Tedeschi —p 306

Landry's Paralysis—Hassin describes the case of a boy aged 12 who died after an illness of seventy-two hours with respiratory difficulties. Necropsy revealed disseminated inflammation of both the gray and the white substance of the brain, pons, cerebellum, medulla and spinal cord, with disappearance of many nerve cells especially in the spinal cord and the medulla, cloudy swelling of the liver, kidneys and the heart, which exhibited indistinct cross striations with increased amount of connective tissue about the arterioles and small focal and diffuse accumulations of inflammatory cells (leukocytes, histiocytes) and scattered hemorrhages. Microscopic studies were made on the muscles. The parenchymatous changes consisted of swelling and disruption of the muscle fibers into fibrils and waxy degeneration. There were inflammatory changes in the form of focal and diffuse infiltrations with fibroblasts and lymphocytes. The changes were confined to the diaphragm and the intercostal and pectoral muscles but were especially in evidence in the musculature of the heart. The author stresses that in this case of poliomyelitis microscopic changes were present not only in the central nervous system but also in some muscles. He thinks that involvement of the muscles may be the essential pathologic feature in those cases in which no changes were found in the nervous system (central, peripheral or sympathetic). Like the Brown-Sequard paralysis, Landry's paralysis is not a morbid entity but a symptom complex. In all cases with a clinical picture of Landry's paralysis the muscles, especially those of respiration, should be examined carefully. It is even more important to ascertain the condition of the heart, which may be responsible for the rapid and often fatal course.

Journal of Pediatrics, St Louis

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- Standards for Basal Metabolism of Children from 2 to 15 Years of Age Inclusive R C Lewis, Anna Marie Duval and Alberta Iliff —p 1
- Basal Metabolism in Rheumatic Children E E Brown and Valentina P Wasson —p 19
- *Immunization Against Rheumatic Fever Valentina P Wasson and E E Brown —p 24
- *Hematologic and Radiologic Study of Infants Receiving Massive Doses of Vitamin D in Rickets Prophylaxis A C Rambar, L M Hardy and W I Fishbein —p 31
- *Significance of Plasma Ascorbic Acid Levels in Nebraska Children J L Gedgoud, Violet M Wilder and J A Henske —p 39
- Pneumothorax in Newborn Infant Report of 3 Cases G W Salmon and G B Forbes —p 50
- *Treatment of Tonsillitis, Pharyngitis and Gingivostomatitis with Bismuth Salt of Heptadienecarboxylic Acid in Cocoa Butter Suppositories S Silber —p 59
- Sanatorium Method for Cure of Rheumatic Heart Disease in Children L M Taran —p 69
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- Infantile Scurvy Case Report with Follow Up Roentgenogram of Pre-existent Healed Scurvy D Blitz —p 87
- Severe Sublingual and Paratracheal Hemorrhage in Hemophilia with Recovery Following Tracheotomy Katharine H Baird and M S Fox —p 90
- Streptococcal Pediatric and Pedagogic Problem C W Wyckoff —p 95

Immunization Against Rheumatic Fever—After nine years of experience with immunization, first with crude and later with attenuated hemolytic streptococcus toxin, against recurrences of rheumatic fever attacks, Wasson and Brown feel that they can state that the children suffer no harm and that in most cases they are much benefited by the prophylactic treatment.

Massive Doses of Vitamin D in Rickets Prophylaxis—Rambar and his co-workers found that the use of a single massive oral dose of an electrically activated vaporized ergosterol, containing 600,000 U S P units of vitamin D, was effective in preventing rickets in a group of infants studied during the fall and winter months. The use of repeated smaller doses of 100,000 U S P units of the same antirachitic agent given monthly during this period (October to April) was effective also in preventing rickets in each of the infants studied. No toxic clinical or laboratory findings occurred in any of the infants receiving this type of prophylaxis.

Plasma Ascorbic Acid Levels in Nebraska Children.—Gedgoud and his collaborators show that attempts to evaluate levels of ascorbic acid in the plasma in children have led to a variance of opinions. Doubt has been expressed as to whether or not a level of 0.7 mg per hundred cubic centimeters or more is actually the standard toward which to strive. The present investigation seeks to throw further light on these problems, utilizing children admitted to the University Hospital in Omaha from every part of the state of Nebraska and representing the lowest income group. On a daily intake of from 60 to 80 mg of ascorbic acid a level of 0.7 mg per hundred cubic centimeters or more was attained in 81 per cent of children entering the hospital without infection, regardless of the entrance value. The ease of attaining a value of 0.7 mg per hundred cubic centimeters or more indicates that 36.4 per cent of "healthy" children were probably on a diet containing less than from 60 to 80 mg daily and that levels of from 0.4 to 0.69 mg per hundred cubic centimeters may still be considered "borderline." In 2 healthy infants entering with plasma levels in the borderline (0.4 to 0.69 mg per hundred cubic centimeters) zone, 60 to 80 mg of ascorbic acid daily did not raise the level beyond 0.7 mg per hundred cubic centimeters over observation periods of from eighteen to nineteen days. This is an incidence of 2 in 96 cases. Of 12 children with infections, from 100 to 150 mg daily was adequate to raise the plasma level to 0.7 mg per hundred cubic centimeters or more in 11 over periods of from three to twenty-one days. Only 1 "healthy" child persisted in maintaining a low level of plasma ascorbic acid on an intake of from 60 to 80 mg daily during eleven days of observation.

Treatment of Tonsillitis with Bismuth Salt of Heptadienecarboxylic Acid in Suppositories—Thirty-two patients with tonsillitis, pharyngitis and gingivostomatitis were treated by Silber with suppositories containing the bismuth salt of heptadienecarboxylic acid. Subjective symptoms disappeared within twenty-four to forty-eight hours after treatment was begun. The temperature dropped within twenty-four hours and was normal in from thirty-six to forty-eight hours in most cases. Signs of local improvement appeared within twenty-four hours. In patients in whom attacks of a similar nature had occurred, whatever form of treatment was used, the duration of the illness was much longer than in those treated with bismuth. No more than two suppositories at twenty-four hour intervals were required in all but 1 patient. There were no local ill effects from the use of the suppositories. There were no toxic reactions to bismuth. The method has advantages over other methods, including the sulfonamides and arsphenamines, because of the ease of administration, the freedom from danger of toxic reactions, the sparing of the sulfonamides for conditions in which their specificity and definite indications more strongly require their use, and the avoidance of production of sulfonamide resistance or sensitivity by their use in conditions in which another medicament of proved equal or greater value is available.

Kentucky Medical Journal, Bowling Green

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- Symposium on Vitamin C Deficiency Scurvy B H Hollis —p 264
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- Cancer of Cervix M Casper and N L Casper —p 278
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- Prothrombin Deficiency in Biliary Obstruction and Diseases of Liver
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Venous Pressure in Lower Extremities During Abdominal Operations
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Advances in Malaria Research Q M Geiman—p 283

Prothrombin Deficiency in Biliary Obstruction and Diseases of Liver—Maintenance of normal plasma prothrombin, according to Herbert, depends on an adequate supply and absorption of vitamin K. The deficiency can be rapidly corrected by injection of vitamin K or its analogues. Estimations of plasma prothrombin often give warning of the risk of post-operative hemorrhage in cases in which there is no spontaneous hemorrhage and no abnormality in coagulation time or bleeding time. The estimation of prothrombin is therefore a useful clinical test, indicating when prophylactic treatment is necessary. There is usually a fall in plasma prothrombin following operations on the biliary tract, so that a normal value before operation does not necessarily exclude the risk. She describes a two stage method of estimating plasma prothrombin. The method was used in 51 cases with obstructive jaundice and with serum bilirubin levels over 24 mg per hundred cubic centimeters. Of these, 68 per cent showed hypoprothrombinemia, and in 30 per cent the titers fell below 50 per cent of the normal average. These results are closely similar to those obtained by Brinkhous Smith and Warner and by Stewart and Rourke with the two stage method, although there is a slightly higher

proportion of normal results in the present series. In 40 cases of liver disease studied in the present series 68 per cent showed hypoprothrombinemia, and in 25 per cent the titers fell below 50 per cent. In some cases hypoprothrombinemia was found when the jaundice was extremely slight. Cases are quoted of the restoration of the plasma prothrombin level to normal by treatment with menadione in cases of biliary obstruction, and of failure of this treatment when there was damage to the hepatic parenchyma. When normal plasma prothrombin exists before operation hypoprothrombinemia and hemorrhage may develop a few days after the operation.

New Orleans Medical and Surgical Journal

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Northwest Medicine, Seattle

42 207-240 (Aug) 1943

- Old and New Horizons of American Tropical Medicine E. C. Faust
—p 213
*Vitamin A Its Effect on Acne Study of 100 Patients J A
Straumfjord—p 219
Dissolution of Vesical Calculi N B Rawls and E. S. West—p 226
Hospitalization of Tonsil Fossae L C Potter—p 229

Effect of Vitamin A on Acne—Straumfjord points out that explanations offered for the causation of acne are obscure and conflicting. The basic primary lesion of acne is a hyperkeratosis of the pilosebaceous follicle identical with the hyperkeratosis described in vitamin A deficiency. During the last five years approximately 300 cases of acne were seen at his clinic. Vitamin A was prescribed in high dosage. The data obtained from 100 patients were sufficient for analysis. These 100 patients were treated with a supplement of approximately 100,000 international units of vitamin A daily for six months and longer. Seventy-nine became free or nearly free from the eruption and only three were unimproved. The response of follicular hyperkeratosis and of acne to the administration of vitamin A suggests that their cause is the same, that both are cutaneous lesions of vitamin A deficiency.

Public Health Reports, Washington, D C

58 1077-1120 (July 16) 1943

- Opening Remarks to Forty First Annual Conference of United States
Public Health Service with State and Territorial Health Officers
T. Parran—p 1077
Community Services vs Lost Man Hours P V McNutt—p 1082
Outlook for Coming Year J W Mountain—p 1088
Opportunities in Newer Methods of Tuberculosis Case Finding H F
Hilleboe—p 1094

58 1121-1164 (July 23) 1943

- *Extent of Immunization and Case Histories for Diphtheria, Smallpox,
Scarlet Fever and Typhoid Fever in 200,000 Surveyed Families in
28 Large Cities S D Collins and Clara Council—p 1121

58 1165-1200 (July 30) 1943

- Studies on Strains of Aerobacter Cloacae Responsible for Acute Illness
Among Workers Using Low Grade Stained Cotton B H Caminita
R. Schneider R. W. Kolb and P. A. Neal—p 1165
Soap Which Indicates Presence of Mercury Fulminate H S Mason
and I. Botwinick—p 1183

Extent of Immunization in Large Cities—The study is based on a canvass of 213,931 households in twenty eight cities of 100,000 or more population selected as representative of cities of that size in different geographic sections. Immunizations against scarlet fever and typhoid are negligible in frequency as compared with those against diphtheria and smallpox. In the preschool ages diphtheria immunizations are more

frequent than smallpox vaccinations, but after five years the reverse is true. At 8 years of age 61 per cent of the children had been immunized against diphtheria and 85 per cent had been vaccinated against smallpox at some time since birth. There is considerable geographic variation in the extent of immunization against these diseases. These twenty-eight large cities were divided into five geographic groups, Northeast, North Central, Intermediate, South and West. In diphtheria immunizations the West is lowest from birth through 7 years, but beyond that age the South is lowest, the Intermediate is highest from birth through 5 years, but after 6 years the Northeast and North Central are above the Intermediate. The South and Intermediate cities are highest in history of diphtheria cases. In smallpox vaccinations the Northeast, Intermediate and South all get above 90 per cent by about 8 years of age, but the North Central and particularly the West are low, the latter reaching only about 60 per cent. In history of smallpox cases the West is above any other section. In scarlet fever immunizations the West and North Central are far above the other sections, but no region gets above about 5 per cent. In scarlet fever cases the North Central and Intermediate are at the top. In typhoid immunizations the South is far above any other section, with the West second. The South shows the highest history of typhoid cases. The numbers of scarlet fever and typhoid immunizations are too few in any section to have any definite effect on the course of these diseases, the immunized, therefore, represent protection for certain individuals only, and the highest immunization rates show up where case rates are high enough to stimulate the use of the vaccine. When children were classified according to family income it was found that in the preschool ages the percentages of children who had been immunized against diphtheria and smallpox increase definitely with income. The same was true for diphtheria immunizations during the school ages, but there was little difference in smallpox vaccinations as between high and low incomes. Scarlet fever and typhoid immunizations increase with income in each of the three age groups under 15 years, indicating that these immunizations are largely the result of individual initiative rather than public programs.

Puerto Rico J Pub Health & Trop Med, San Juan

18 387-504 (June) 1943

- Immunologic Relations Between Virus of Equine Encephalomyelitis of Colombia and of Venezuela V Kubes—p 402
Weil Felix Reaction and Proteus Group of Bacteria A Pomales Lebron and P Morales Otero—p 412
Poisoning by Carbon Tetrachloride and Oil of Chenopodium F Hernandez Morales and R Diaz Rivera—p 434
Studies on Syphilis in Puerto Rico Review of Literature of Island and of Surveys Based on Blood Tests with Comments O Costa Mandry—p 452

Review of Gastroenterology, New York

10 187-232 (July-Aug) 1943

- Emotional Factor in Peptic Ulcer H L Bolen—p 187
Colloidal Kaolin and Aluminum Hydroxide Gel (Kalam) in Management of Lower Bowel Conditions M G Spiesman—p 191
Clinical Significance of Concentration of Pepsin in Gastric Juice H Barowsky, R Upham, L B Dotti and I S Kleiner—p 201
Effectiveness of Syntrogeol in Treating Gastric Disturbances Characterized by Hyperacidity, Flatulence, Indigestion and Pain L H Turek—p 204
Chase-Lain Goldstein Syndrome—Galvanic Batteries in Human Mouth H J Goldstein—p 206
Sudden Death Following Use of Pontocaine as Gargle Anesthetic for Gastroscopic Examination F M Hansen Jr and C L Stealy—p 212
Anatomic Basis for Study of Splanchnoptosis Paths of Ascent to Erect Position from Birth to Fourth Year of Life and Their Relation to Splanchnoptosis and Body Form and Body Cavities Agnes C Victor—p 213

Rhode Island Medical Journal, Providence

26 107-142 (Aug) 1943

- Changing Views of Contagious Diseases E H Place—p 115

26 143-186 (Sept) 1943

- Massive Arsenotherapy of Early Syphilis D W J Bell and K K Gregory—p 153
Luxury of Social Insurance J Farley—p 157
Essentials of Diagnosis of Heart Disease C B Leech—p 159

Rocky Mountain Medical Journal, Denver

40 433-496 (July) 1943

- Place of Physician and Hospital in Use of Blood Bank O S Philpott—p 451
Clinical Uses of Plasma and Whole Blood W Darley—p 452
Selection and Care of Donors Mildred Doster—p 455
Processing and Preservation of Blood Plasma M R Rymer—p 457
Regeneration of Blood in Donors E R Mugrage—p 459

40 497-568 (Aug) 1943

- Thyroid Disease Military Surgical Problem K C Sawyer and J S Haley—p 516
*Perforating Gallbladder Report of 24 Cases N F Hicken and Q B Coray—p 524
Practical Application of Liver Function Tests W B Yegge—p 529
Coronary Occlusion F Mayner—p 533
Sudden Death Following Injection of Mercurial Diuretic G G Richards and L G Moench—p 535

Perforating Gallbladder—Hicken and Coray present a study of 24 cases of perforated gallbladders. The complication occurred in 25.6 per cent of all cases of acute cholecystitis which the authors have seen. They maintain that acute cholecystitis constitutes the same type of surgical emergency as does acute appendicitis, except that it is even more urgent. Many appendical crises would subside if treated conservatively, yet immediate surgery pays good dividends. In acute cholecystitis corrective operations should be employed as soon as the patient has been properly prepared. This requires but twelve to twenty-four hours to accomplish. Clinical signs and symptoms, laboratory data and roentgenologic studies have all been unreliable in determining which "acute gallbladders" will subside and which will become progressively worse, hence surgical intervention is imperative. Spinal anesthesia is the agent of choice. It is nontoxic to the liver, provides complete muscular relaxation and effectively collapses the distended intestines, thus expediting surgical explorations. The operation must be selected to fit each individual case. In every instance the common bile duct must be explored either roentgenographically by means of cholangiograms or surgically before disturbing the gallbladder. Whenever possible the gallbladder should be removed. The postoperative care is essential and aims at maintaining the essential physiologic processes at a normal level. Postoperative cholangiograms are used to determine the proper time for removing the choledochal drains. The mortality rate for this series was but 9 per cent. Acute cholecystitis and perforations of the gallbladder are both preventable complications of chronic cholecystitis. Operations during the chronic phase would eliminate these exacerbative reactions.

Southern Medical Journal, Birmingham, Ala

36 543-602 (Aug) 1943

- Anatomic and Mechanical Features of Treatment of Fractures of Humerus W G Stuck—p 543
Evaluating Ureteral Splint R F Sharp—p 549
Bone Lesions in Acquired Tertiary Syphilis H C Francis and R H Kampmeier—p 556
Cardiovascular Allergy H M Davison J C Thoroughman and H Bowcock—p 560
Yardstick of Allergic Therapy C M Stroud—p 567
Milk Intolerance Cause of Nutritional Entity Clinical Study P A McLendon and Dorothy S Jaeger—p 571
Reactions to Nirvanol Phenytoin Sodium and Phenobarbital Report of Case of Fcidermosis Erosiva Pluriorificialis Following Ingestion of Phenytoin Sodium T A Ellis—p 575
*Congenital Cerebral Aneurysms Lateralized by Electroencephalography B Woodhall and H Lowenbach—p 580
Essential Pentosuria (Xyloketosuria) Report of Case R C Derivaux—p 587
Carcinoma of Esophagus I D Woodward—p 590
Proctologic Significance of Diarrhea H G Hummel—p 592

Congenital Cerebral Aneurysms Lateralized by Electroencephalography—Woodhall and Lowenbach describe a method of lateralization of the bleeding point in cases of spontaneous subarachnoid hemorrhage by the use of electroencephalography. The method is based on experiences in 3 cases showing a neurologic defect and in 3 selected cases without neurologic changes. The aneurysms in the first group were demonstrated at operation. In all of the cases the aneurysm was visualized by arteriography using 20 per cent thorium dioxide. The electroencephalographic signs which the authors regard as characteristic consist of a more or less evident asymmetry of amplitude, frequency and wave form between the tracings obtained from the two hemispheres, with the abnormal

Findings present over the hemisphere containing the bleeding point. This abnormal activity may be due to relative cerebral anaemia resulting from rupture of a congenital cerebral aneurysm, the common cause for such hemorrhages.

Texas State Journal of Medicine, Fort Worth

39 221-274 (Aug) 1943

- Rheumatic Heart Disease in Texas G M Decherd Jr and G R Herrmann—p 229
Diabetes Insipidus T Findley—p 232
What is Wrong with Chronically Tired Patient? L H Reeves—p 235
Mental Rehabilitation of Patients with Arrested Tuberculosis S E Thompson and W W Coulter Jr—p 238
Gastric Failure in Middle Life J E Johnson—p 239
Roentgenologic Diagnosis of Carcinoma of Colon L W Baird—p 243
Increased Prevalence of Poliomyelitis in Texas and Possible Control Measures G W Cox—p 247
Complete Lacerations of Perineum J A Heymann—p 248

Virginia Medical Monthly, Richmond

70 383-432 (Aug) 1943

- Rheumatic Fever and Rheumatic Heart Disease in Virginia P D Camp and Louise Galvin—p 397
Industrial Development of Vitamins of B Complex C R Addinall—p 402
Ectopic Pregnancy Report of 130 Cases F S Johns—p 407
Genesis of Disabling Heart Attack with Discussion of Symptoms A L Tynes—p 410
Wolff Parkinson White Syndrome J P Lynch and R G McAllister—p 415
Some Menstrual Disturbances J Natt—p 418

War Medicine, Chicago

4 129 246 (Aug) 1943

- Etiologic Factors in Adjustment of Men in Armed Forces D L Steinberg and Mary Phyllis Wittman—p 129
*Use of Plastic Gels as Vehicles for Applying Sulfonamide Compounds to Wounds R Hare and Eina M Clark—p 140
*March Fractures of Lower Extremity Report of Case of March Fracture of Cuneiform Bone H M Childress—p 152
Medical Aspects of Accidents and Mistakes in Industrial Army and in Armed Forces F Dunbar—p 161
Retention of Atabrine in Animal Body Excretion in Bile and Urine and Effect on Cholic Acid Output J H Annegers F E Snapp L Paskind A C Ivy and A J Atkinson—p 176
Head Injury Review of Literature—H H Merritt—p 187
Liquid Adhesive W Grossmann—p 216

Plastic Gels as Vehicles for Sulfonamides—Hare and Clark attempted to find a suitable method for the first aid treatment of persons wounded in battle who may be compelled to lie unattended for days before proper surgical treatment becomes available. Sulfanilamide alone or incorporated in a vehicle leaves much to be desired, for it is absorbed within the first twenty-four hours. Sulfathiazole without a buffer is much more slowly absorbed than sulfanilamide because it is so much less soluble. It also acts on a greater variety of clostridia than sulfanilamide and may even have some action on staphylococci. When the unbuffered drug is employed, an effective potential is maintained for only sixty hours and the formation of crystals is a great drawback. When the drug was incorporated in a plastic material, such as methyl cellulose, the effective concentration was maintained for much longer periods and crystal formation was not observed. Another advantage is its ability to absorb three to eight times its own weight of serum or plasma. This will tend to facilitate soaking up of oozing blood and serum, in this process the vehicle swells and, if a tight bandage is applied, the pressure exerted by the swelling may prevent further capillary bleeding and may even arrest venous hemorrhage. Methyl cellulose is freely soluble in water and can be picked or washed out at debridement. Because methyl cellulose is not absorbed by plasma or other tissue fluids primary or even secondary suture cannot be carried out until it has all been removed. Autoclaving decomposes sulfathiazole, but hot air sterilization has no deleterious effect. Satisfactory sterilization may be obtained by heating in hot air at a temperature of 140 C for three hours.

March Fractures of Lower Extremity—Childress points out that march fracture has long been considered synonymous with march foot. Recently, more attention has been given to similar fractures occurring in the long bones of the lower extremity. Terms used to designate this lesion include incomplete, exhaustion insufficiency, false, spontaneous, creeping,

chronic, fatigue, stress, insidious and soldiers' fracture. March fracture of the foot is the most common of all march fractures. Next in frequency are march fractures of the tibia. March fracture of the fibula usually occurs near the proximal or the distal end of the bone. March fractures of the femur occur in the lower portion of the shaft and at the neck. Occasionally the pelvic bones may develop march fractures. Regardless of the bone involved in march fracture, the onset and progression are much the same. The lesion is produced by repeated minimal trauma, which by summation causes an overloading of the functional capacity of an otherwise normal bone. This occurs particularly in soldiers carrying packs and in workers performing heavy labor. The onset may be acute but is usually insidious. The pain is dull and vague at first and is initiated by prolonged periods of weight bearing. Rest gives complete relief. With continued activity the pain increases in severity. A localized swelling of soft tissues develops in association with tenderness on deep pressure. The overlying skin may be slightly reddened, with increased heat. Immediately after onset roentgenograms of the involved bone usually do not reveal anything abnormal. A faint incomplete fracture line may be demonstrated. In two to three weeks callus is noted. Diagnosis in many cases is not made until a large amount of callus has been formed. In the foot this osseous mass may exert pressure on adjacent soft structures and thus produce considerable pain. Complete rest of the part is indicated in order to decrease the size of the callus, also to prevent a refracture. Adequate support must be maintained until full healing has been obtained. Osteogenic sarcoma, Ewing's tumor, nonsuppurative osteomyelitis and syphilitic periostitis should be differentiated from march fracture. Before a biopsy is done the bone should be observed clinically and roentgenographically during and after a few weeks of complete rest of the affected part. To decrease the incidence of this fracture a gradual physical build-up should be given to both army recruits and formerly unemployed civilian workers. The author reports a case of march fracture of the cuneiform bone. His review of the literature failed to disclose another solitary march fracture of the cuneiform bone. He suggests that many may have occurred but have been treated under other diagnoses.

Western J Surg, Obst & Gynecology, Portland, Ore

51 305-348 (Aug) 1943

- Ureteral Injury During Gynecologic Surgery T W Adams—p 305
Foreign Bodies in Air Passages of Children P M Frederick and J G Verberkmoes—p 325
Cesarean Section in Portland Oregon During 1942 G P Lee—p 330
Roentgen Diagnosis of Fractures M D Sachs—p 335
Concerning Nature of Intracellular Inclusions and Their Significance in Gynecology A E Taft—p 342

Wisconsin Medical Journal, Madison

42 749-880 (Aug) 1943

- Treatment of Cardiovascular Emergencies in Home F D Murphy—p 769
Hospital Treatment of Cardiac Cases A G Koehler—p 775
Kenny Concept of Infantile Paralysis W H Cole—p 778
Wisconsin Experience with Kenny Treatment Methods H M Coon—p 783
Modern Treatment of Acute Osteomyelitis A C Schmidt—p 785
Treatment of Painful Feet How to Meet the Problem R P Montgomery—p 787
Why Should Cancer Cases be Reported? W C Keettel—p 790

Yale Journal of Biology and Medicine, New Haven

15 769-928 (July) 1943 Partial Index

- Simple Method of Evaluating Fitness in Boys Step Test J R Gallagher and L Brouha—p 769
Toxicity of Chlorinated Hydrocarbons Alice Hamilton—p 787
Factors Associated with Lesions of Brain That Follow Intracranial Injection of Thromboplastic Substance R Katzenstein and H Arnold—p 803
Sulfonamide Activity as Influenced by Variation in μ of Culture Media A H Brueckner—p 813
Experimental Hypothalamic Hyperphagia in Albino Rat J R Brobeck, Jay Tepperman and C N H Long—p 831
Role of Liver in Synthesis of Fatty Acids from Carbohydrate Virginia C Dickerson J Tepperman and C N H Long—p 875
Left Subdiaphragmatic Abscess Report of Case G J Connor—p 905
Study of Familial Spread of Hemophilus Influenzae Type B P G Good Mildred D Fousek Marya F Grossman and P L Boisvert—p 913

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

55 169-198 (July) 1943

Serologic Change Occurring During Short Courses of Neoparsphenamine and Bismuth, Such as Were Possible While Patients Stayed at Venereal Diseases Center for African Soldiers W. A. Young—p. 169
Clinical Notes on 2 Cases of Acanthosis Nigricans A. G. Peterkin and E. C. Jones—p. 185

British Journal of Urology, London

15 39-78 (June) 1943

History of Urethral Stricture H. L. Attwater—p. 39
Operation Used for an Impassable Stricture of Penile Urethra I. J. D. Inne—p. 52

British Medical Journal, London

2 127-158 (July 31) 1943

Typing of Paratyphoid B Bacilli by Means of Vi Bacteriophage A. Felix and Bessie R. Callow—p. 127
Value of Phage Typing in Investigation of an Outbreak of Paratyphoid B Fever J. R. Hutchinson—p. 130
*Two Stage Amputation: Primary Planned Amputation in Presence of Sepsis E. A. Jack and J. Charnley—p. 131
Pasteurization of Milk and Infant Mortality Rates in Toronto Vancouver and Victoria A. Brown—p. 133
Ocular Criteria of Deficiency of Riboflavin M. K. Gregory—p. 134
Rupture of Rectus Abdominis Muscle During Pregnancy R. C. Thomas—p. 136

Two Stage Amputation—Jack and Charnley show that the procedures at present in vogue for amputation accept infection of the stump as inevitable. The guillotine seeks to sidetrack it, the loose closure method to minimize its effects. The two stage amputation employs two principles. First, to combat implanted or invading organisms, sulfanilamide powder is introduced into the wound in large quantity to maintain a high local concentration. Second, to counter the predisposing conditions a large dry gauze pack is sutured under the flaps with its ends left projecting from the corners of the incision. The pack must be large so that the flaps are sutured over it under moderate tension approximating that obtaining in normal tissues. It must be of dry gauze so that it is absorbent. There is an outpouring of serum from the raw surfaces, which soaks into the pack. By the capillary action of the gauze it is conducted out. At the same time a proportion of the sulfanilamide is dissolved by the serum and the pack becomes a reservoir of sulfanilamide in high concentration. The tension of the flaps over the pack maintains the circulation as normal as possible, and at the same time an even pressure is produced over the whole surface of the wound, thus preventing edema and promoting effective hemostasis. The first stage starts as a standard flap amputation at the site of election. The second stage should be performed four or five days later. The two stage method has been used in 26 cases. Primary healing without complication was obtained in 18. In 3 others the skin margins slid apart for about half an inch but healed without sepsis when they were drawn together with strapping. Three cases developed sepsis at the skin edges, which did not interfere with the healing. Only 2 cases developed severe infection with suppuration. The two stage amputation has yielded impressive results. Should it fail in its object of preventing infection, no harm has been done. The two stages of the procedure fit logically into the average time lag between forward area surgery and arrival at a base hospital.

2 159-190 (Aug. 7) 1943

Some Problems in Control of Infectious Diseases R. Cruickshank—p. 159
*Early Treatment of War Wounds of Upper Part of Face M. C. Oldfield—p. 163
Specific Gravity of Cerebrospinal Fluid with Special Reference to Spinal Anesthesia W. Etherington Wilson—p. 165
Traumatic Arterial Spasm C. W. Clark—p. 167
Common Cause of Diarrhea Vomiting and Dehydration in Infants P. W. Leathart—p. 168

Early Treatment of War Wounds of Upper Part of Face—Oldfield emphasizes the following six elementary principles in the early treatment of wounds of the upper part of the face: 1. Cleanse the wound most thoroughly with soap and

water, peroxide and saline solution. 2. Never excise a facial wound. 3. Save the framework of the face even if it is loose; sacrifice a bony fragment only if it is completely detached from all the surrounding tissues. 4. If there has been any skin loss, pack the wound with sulfanilamide powder and leave it open. 5. If there has been no skin loss and the wound is recent, insert fine silk stitches and remove them within three days. 6. In the face, never insert a few big stitches under tension; they usually lead to serious septic complications and will always be followed by an irreparable scar, which will remain a disfigurement for life.

Journal of Physiology, Cambridge

102 1-126 (June 30) 1943

Effect of Muscular Exercise on Serum Cholinesterase Level in Normal Adults and in Patients with Myasthenia Gravis H. B. Stoner and A. Wilson—p. 1
Effect of Temperature on Blood Flow and Deep Temperature in Human Forearm H. Barcroft and O. G. Edholm—p. 5
Sympathetic Vasoconstrictor Tone in Human Skeletal Muscle H. Barcroft, W. McK. Bonnar, O. G. Edholm and A. S. Effron—p. 21
Histamine in Nervous Tissue H. Kwiatkowski—p. 32
Seasonal and Annual Changes in Calcium Metabolism of Man R. A. McCance and E. M. Widdowson—p. 42
Effects of X Rays on Acetylcholine Solutions Showing Dilution and Protection Phenomena Found for Enzymes W. M. Dale—p. 50
Oxygen Affinity of Human Maternal and Fetal Hemoglobin E. F. McCarthy—p. 55
Experiments on Blood Supply of Nerves F. H. Bentley and W. Schlapp—p. 62
Effect of Pressure on Conduction in Peripheral Nerve F. H. Bentley and W. Schlapp—p. 72
Determination of Oxygen Combining Power of Blood with Barcroft Differential Manometer Q. H. Gibson—p. 83
Periodic Changes in Respiratory Depth, Produced by Changes in Lung R. V. Christie and G. W. Hayward—p. 88
Mechanism of Vasomotor Reflexes Produced by Stimulating Mammalian Sensory Nerves G. Gordon—p. 95
Effects of Iodoacetic Acid, Glyceraldehyde and Phosphorylated Compounds on Small Intestine of Rabbit W. Feldberg—p. 108
Pancreozymin Stimulant of Secretion of Pancreatic Enzymes in Extracts of Small Intestine A. A. Harper and H. S. Raper—p. 115

Lancet, London

2 91-118 (July 24) 1943

Dehydration \ Morris—p. 91
Anaerobic Infections of War Wounds in Middle East J. D. MacLennan—p. 94
Serial Sedimentation Indexes, Measure of Progress in Pulmonary Tuberculosis G. Day—p. 99
Supersaturated Sulfathiazole Solutions for Local Application J. A. De Loureiro—p. 102
*Generalized Vaccinal Reactions in Allergic Subjects L. S. P. Davidson and L. J. Davis—p. 103

Generalized Vaccinal Reactions in Allergic Subjects—Davidson and Davis report observations during the recent small outbreak of smallpox in the Edinburgh area, when a large proportion of the population was vaccinated or revaccinated. Four patients manifested generalized complications after vaccination in whom there was presumptive evidence of an underlying allergic diathesis. The ages of the patients varied between 4 and 40 years. The abnormal reactions appeared from eight to ten days after the vaccination. Purpuric manifestations appeared in 3 of the patients, 2 of whom developed well defined edema at the same time. The remaining patient showed generalized vaccinia. These abnormal reactions may be related to an allergic tendency, since in case 1 there was a personal and in case 2 a familial history of allergy, and in the other 2 cases there were clinical grounds for postulating the presence of abnormal sensitivity.

2 119-146 (July 31) 1943

*Injuries Produced by Blast in Water J. C. Goligher, D. P. King and H. T. Simmons—p. 119
Anaerobic Infections of War Wounds in Middle East J. D. MacLennan—p. 123
Phytic Acid and Iron Absorption R. A. McCance, C. N. Edgecombe and E. M. Widdowson—p. 126
*Suprapubic Catheterization for Paralysis of Bladder in Spinal Injury E. W. Riches—p. 128

Injuries Produced by Blast in Water—Goligher and his associates report a clinical and pathologic study of 17 underwater blast injuries. All of the men were suffering from injury to the abdomen. The lesions found were confined almost exclusively to the intestine, stomach and lower end of the esophagus and consisted of intramural hematomas and perforations. Per

forations occurred only in the small intestine and were present in 9 cases. The only constant sign of injury outside the alimentary tract itself was a retroperitoneal hemorrhage behind the right colic flexure. The solid abdominal organs escaped injury. Seven cases showed signs of injury to the lungs, and the pulmonary hemorrhages were identical with those described in bomb blast casualties. In the differentiation of perforating from nonperforating abdominal lesions the features of diagnostic value were persistent severe abdominal tenderness and rigidity together with elevation of the pulse rate of patients with perforations. In cases in which perforating injuries were diagnosed or could not be excluded, laparotomy was performed. Because of the associated lung injuries, infusions of plasma and blood were as far as possible avoided, but it was not always practicable to dispense with them entirely. Of the 9 patients with intestinal perforation, 2 were too ill to stand operation and died, and 7 were operated on, with four deaths. Of the 8 cases with nonperforating lesions, 6 were treated conservatively with one death (from shock immediately after admission), and in 2 in which the diagnosis was doubtful laparotomy was done with recovery. The causes of death were shock, the lung injury and in 1 case peritonitis.

Suprapubic Catheterization for Paralysis of Bladder in Spinal Injury—Riches deplures that there is still no agreement on the treatment of a bladder paralyzed as a result of spinal injury. He shows that a safe and rapid method of suprapubic catheterization has now been devised, it has been used successfully as a means of bladder drainage in more than 20 surgical cases and in a few cases of spinal injury. The simple instrumentarium and the technique are described. After paralysis from spinal injury the bladder should be allowed to distend. When it is distended, suprapubic catheterization should be performed. Tidal drainage should be added after two days. The use of a urethral catheter in the treatment of the paralyzed bladder should be forbidden.

Medical Journal of Australia, Sydney

1 549 570 (June 19) 1943

- Surgeon as Whaleship Owner W E L H Crowther—p 549
Note on Identification of Skulls by X-Ray Pictures of Frontal Sinuses A Schuller—p 554
Causes of Blindness in Children J C Halliday—p 556
Deep X-Ray Treatment of Gas Gangrene Recovery A M Davidson—p 557

*Observations on Treatment of Certain Types of Fractures and Dislocations of Cervical Part of Spine E F West—p 557

1 571 592 (June 26) 1943

- Putumococcal Meningitis of Otic Origin Recovery Following Chemotherapy and Operation T J F Frank—p 571
Studies on Tonicity in Dextrose Sodium Citrate Solutions P W Gill—p 573
Significance of Glycosuria in Absence of Diabetic Symptoms A B Corkill and J P Marks—p 577

Fractures and Dislocations of Cervical Part of Spine—West observed a series of cases of injuries of the cervical portion of the spine, chiefly following accidents in the surf. He gives a detailed description of 2 cases to illustrate the management of such lesions. He recommends a light type of plaster cast, which he describes and illustrates. A short period of immobilization and the avoidance of heavy types of plaster casts will lessen the incidence of neuroses in these cases.

South African Medical Journal, Cape Town

17 183 198 (June 26) 1943

- Soviet Medicine in Wartime N Grashenkov—p 185
Table Knife Lying in Peritoneal Cavity for Five Years I Gordon—p 187

Table Knife Lying in Peritoneal Cavity for Five Years—Gordon reports the history of a truck driver who complained that for the last three months he had experienced discomfort in the region of the right ischio-rectal fossa. A tender lump was found near the skin in the right ischio-rectal fossa. X-ray examination showed a table knife in the abdomen with the point near the skin at the tender spot. He had been admitted to the hospital five years previously suffering from a stab wound of the upper abdomen. At that time the symptoms suggested an injury to the lung. The chest was x-rayed and

nothing abnormal was noted. The entrance scar was situated just below the left costal margin 2 inches from the midline. X-ray examination now showed the handle of the knife in the upper end at McBurney's point and the point of the blade in the right ischio-rectal fossa. No evidence of damage to the stomach or the intestine was found when the abdomen was opened. The knife was lying free in the peritoneal cavity. A sausage shaped roll of omentum completely surrounded the knife, forming a sheath extending down into the pelvis. This sheath was opened and the knife was extracted without difficulty. The patient was discharged on the seventeenth day. The blade of the knife, which was 8 inches long, was as bright as if it had just been polished. There was no evidence of any rusting, nor had the color of the bone handle changed.

Schweizerische medizinische Wochenschrift, Basel

72 1401-1428 (Dec 19) 1942 Partial Index

- Diabetes Insipidus and Simmonds Syndrome After Encephalitis E Glanzmann and C Wegelin—p 1401
*Present Vitamin Supply for Pregnant and Nursing Women W Neuweiler—p 1408
*Sulfathiazole Therapy of Acute Otitis Media A M Hild—p 1410
Clinical Investigations on a Stable, Water Soluble Vitamin K Preparation H J Wespi—p 1414
*Does Fetus in Utero Become Involved in Poliomyelitis During Pregnancy? Lotti Hurny—p 1417

Vitamin Supply for Pregnant and Nursing Women—Neuweiler studied the vitamin supply of pregnant and nursing women. Although many of these women receive some added rations, these will be divided among a family and the pregnant or nursing woman will receive only a part of the ration. Neuweiler determined the vitamin C content of the blood according to the method of van Eekelen and Enmerie in three groups of 40 women each. One group comprised nonpregnant women, one pregnant women and one nursing women. The results were compared with those obtained in similar groups in 1937 and 1938. During the summer of 1942 the values were much lower than they had been during the summer of 1938 and during the winter of 1937. The values were most unfavorable in the blood of nursing mothers. Investigations on the vitamin C content of breast milk, however, revealed practically the same values as during the prewar years. Apparently the danger of hypovitaminosis in the nursing mother is greater than in other women because of considerable elimination into the milk. Physicians should inform themselves regarding the diets of pregnant and nursing women and should prescribe vitamin preparations if the diets seem inadequate. Attention should be given not only to vitamin C but also to vitamins of the B group and to vitamin A.

Sulfathiazole in Otitis Media—Hild treated 180 cases of febrile acute otitis media with sulfathiazole, 166 responded favorably, while 12 were uninfluenced. Antrotomy was necessary in 7 cases. It was found that in the cases treated with sulfathiazole the time necessary for cure was shortened by one third in comparison with the cases in which no sulfathiazole was employed, surgical treatment was required only one fourth as frequently. Sulfathiazole was administered only in the form of tablets. The oral administration answered all requirements. The simultaneous administration of 25 per cent solution of nikethamide counteracted the occasional occurrence of nausea and vomiting. The total dose of sulfathiazole was 16 Gm for adults, 9 Gm for children between 2 and 12 years and 6 Gm for children less than 2 years of age. These doses were given in the course of six days, larger doses being given on the first two days. Serious secondary effects were not observed. The sulfathiazole was particularly effective during the first five days after the onset, but even during the later stage noticeable effects were obtained. Inspection of the tympanum and testing of the hearing by whispering should be done during the entire course of the chemotherapy, because these tests reveal an otherwise unnoticed advancement of the disease process and make possible the consultation of a specialist in doubtful cases.

Poliomyelitis During Pregnancy—Hurny reports the histories of 2 women who developed acute anterior poliomyelitis at the end of their pregnancy. In both patients cesarean operations were done. All three children (1 set of twins) were and remained healthy, but both mothers died as the result of Landry's type of poliomyelitic paralysis shortly after the

cesarean operation This indicates that the placental barrier is impermeable for the virus of poliomyelitis The literature contains only few records of similar cases Three of these are cited by the author In these the children also remained healthy The transmission of antigens was examined in only 1 of the cases reported in the literature In this instance, in which the child was born four and one-half months after onset of the poliomyelitis, the antigen titer was unusually high

Medicina, Madrid

11 357-439 (May) 1943 Partial Index

- *Cerebral Symptoms of Lymphogranulomatosis (Hodgkin Sternberg's Disease) J R Garcia Martin—p 386
Vascular Collapse in Obstetrics R Garcia Pastor—p 394

Cerebral Symptoms of Lymphogranulomatosis—Garcia Martin directs attention to the cerebral form of lymphogranulomatosis, of which a case is reported A man aged 32 presented typical lymphogranulomatosis of two years' duration The diagnosis was verified by a lymph node biopsy In the course of the disease there developed anarthria, which did not improve on administration of arsenicals and roentgen therapy Three months later there were irritability, mental confusion and acute epileptiform attacks Lymphogranulomatosis is caused by a virus with a selective localization in the lymph nodes or in the entire lymphatic system and rarely in the nervous tissue In the reported case the virus was localized in the cortical centers of speech and in the psychomotor zones

Prensa Médica Argentina, Buenos Aires

30 787-830 (May 5) 1943 Partial Index

- *Coagulation of Blood in Intermittent Claudication and Gangrene of Lower Limbs A V Di Cio and R Bay—p 789
Mycotic Ulcer of Cornea F L Niño—p 797
Heart Disease and Liver Function M Bernstein, E B Le Win and S Simkins—p 816

Coagulation of Blood in Intermittent Claudication and Gangrene of Lower Extremities—Di Cio and Bay studied 86 patients with peripheral vascular diseases Lee and White's technic, in which coagulation between five and eight minutes is considered normal, was used Tanturi-Banfi-Quick's modified technic for determining the time of formation of prothrombin and the concentration of prothrombin in the blood, in which a time of formation of prothrombin between eighteen and twenty seconds and a concentration varying between 80 and 110 mg per hundred cubic centimeters of blood are considered normal, were also used The time of blood coagulation was diminished in 10 of 19 cases of intermittent claudication without arterial blood hypertension, in 22 of 32 cases of intermittent claudication with arterial blood hypertension, in 4 of 7 cases of intermittent claudication with intestinal parasitism, in 10 of 18 cases of gangrene of the lower limbs without arterial hypertension and in 6 of 10 cases of gangrene of the lower limbs with arterial blood hypertension Blood coagulation time was normal in the remaining cases in each group The time of formation of prothrombin and the concentration of the substance in the blood were normal in all cases The authors believe that the diminished blood coagulation time is due to a diminished concentration of heparin and other anticoagulating substances in the blood

Rev Brasileira de Oto-Rino-Laringologia, São Paulo

11 5-148 (Jan-Feb) 1943 Partial Index

- *Otitis Media and Its Complications in Diabetic Patients F de Paula Pinto Hartung—p 5
Total Destruction of Tongue Due to Carcinoma E Moreira—p 97

Otitis Media in Diabetic Patients—De Paula Pinto Hartung directs attention to the grave prognosis of acute otitis media in diabetic patients The success of therapy depends on maintaining the patient on a correct antidiabetic diet and on proper doses of insulin and sulfanilamide in preparation for operation when the latter is indicated Coma following on the appearance of labyrinthine symptoms and in the course of pneumococcal meningitis complicating the otitis media does not constitute a contraindication to an operation, which should be performed without delay A man aged 35, with diabetes, had an attack of acute otitis media He improved on sulfanilamide therapy, insulin and proper diet A mastoidectomy performed

for symptoms of mastoid involvement was followed by improvement which lasted two months, after which the patient developed acute meningitis and coma The cerebrospinal fluid was under increased pressure, was purulent and contained pneumococci The patient recovered after an operation, sulfanilamide and insulin therapy

Deutsche medizinische Wochenschrift, Leipzig

68 365-392 (April 10) 1942 Partial Index

- Hormone Therapy During Childhood G Bessau—p 365
Treatment of Hormonal Disturbances with Estrogenic Stilbestrol Preparations O Bauer—p 369
*Morphology of Symptom of Infantile Little Finger Maria Lutz—p 371
*Development of Malarial Sporozoites in Warm Blooded Animals W Schulemann—p 374
Occurrence of Wallgren's Epidemic Serous Meningitis in Hungary R von Engel—p 379

Symptom of Infantile Little Finger—Lutz points out that the symptom of infantile little finger was first described by Du Bois in 1926 under the term "auriculaire infantile" and was identified by him as a sign of congenital syphilis After citing and evaluating subsequent reports on this sign, the author describes her own studies on the basis of roentgenograms In a normal hand there exists a definite ratio between the different parts of a finger as well as between each part of a finger and the corresponding part of the other fingers The shortening of a bone becomes manifest in a shifting of this ratio The author investigated these ratios roentgenologically in 7 normal hands and in 20 hands with the symptom of infantilism of the little finger She emphasizes that the shortening of the little finger is due either to a noticeable isolated shortening of the fifth metacarpal or of the middle phalanx of this finger or it results from a summation of minimal shortenings of several bones Roentgenoscopy shows that in the normal hand the second interphalangeal cleft of the little finger is considerably distal to the first interphalangeal cleft of the fourth finger In the hand with the little finger sign, however, the two clefts are in the same line or the little finger cleft is proximal to that on the fourth finger Roentgenologic examination is not always necessary, since Hissard's description of the relative shifting of the skin folds usually indicates the bone shortening Shortening of the fourth finger is occasionally added to the infantilism of the little finger If such bone metaphasias are unilateral they can be designated as finger asymmetry, which is likewise a sign of congenital syphilis

Development of Malarial Sporozoites in Warm Blooded Animals—Schulemann points out that experimental studies by Missiroli and by Kikuth and Mudrow proved that the sporozoites of the malarial plasmodia do not attack the erythrocytes of warm blooded animals directly but pass through an intermediate development Considerable discussion arose regarding the intermediate stages The author made studies with an improved technic Salivary glands of *Culex pipiens* which contained sporozoites of *Plasmodium cathemerium* were crushed with canary serum This suspension was stained with trypan violet and then injected into the subcutaneous fat of canaries The injected area was excised twenty-four, forty-eight, sixty-three and ninety-nine hours after injection At the end of twenty-four hours the majority of sporozoites appear as slender forms with one but mostly two and rarely three chromatin granules In some of the sporozoites the protoplasm shows slight swelling In the sporozoites that have two chromatin granules it can be seen that the granules become separated and shift to the ends In injected areas removed later (after forty-eight, sixty-three or ninety-nine hours) the swelling of the protoplasm increases continuously The chromatin granules likewise grow, the lacing in and the later complete division of the protoplasm between the chromatin granules progresses and division follows The resulting mononuclear round forms develop into polynuclear forms The sectioned specimens show that the described sporozoites are extracellular Later the development is extracellular as well as intracellular The author thinks that it is too early to decide definitely whether and in what manner sporozoite development takes place, but observations so far seem to prove Missiroli's claim that there is a division of sporozoites The later development is much more varied than has hitherto been believed

Book Notices

Allergy By Erich Urbach M.D. Chief of Allergy Service Jewish Hospital Philadelphia with the collaboration of Philip M. Gottlieb M.D. Associate on Allergy Service Jewish Hospital Fabrikoid Price \$12 Pp 1078 with 396 illustrations New York Grune & Stratton 1948

This is the most ambitious work on allergy in recent years. The massiveness of this volume of more than a thousand pages, with 2,262 references appearing as footnotes, indicates the thoroughness of the work. The illustrations are excellent in reproduction and choice. It is a reference work which the specialist in allergy will appreciate for its thoroughness in both allergy and applied immunology. Whether physicians other than specialists will equally appreciate it will depend on the degree of their interest in allergy and immunology. The very completeness with which the literature is covered and the thoroughness of many of the discussions may overwhelm the reader who is not definitely interested in these subjects.

This book is divided into three parts. In part I, covering the first 283 pages, the author discusses the fundamentals of allergy from the point of view of the immunologist. An excellent and clear presentation with a thorough review of the literature is given of this subject. However, the weakness of this entire work first appears in this section. The author rejects Pirquet's concept of allergy as too broad. For he substitutes his own classification—a very complex one requiring many obscure terms coined by the author or by other Europeans but not generally used or accepted in the American literature. The following are a few examples: pathergy, allergization, deallergization, parallelism, metallergy and many other newly coined or generally unaccepted terms. Our knowledge of immunology and certainly of allergy is today too limited to warrant burdening it with a multiplicity of new terms for the sake of the "working hypothesis" of any one man. If the critical reader will disregard this objection he will find in this section an excellent discussion of immunity as related to allergy and of the identity of anaphylaxis and atopy.

The latter part of this first section deals with the methods of diagnosis and with the general methods and principles of treatment. Here much controversial material will be found. It starts with such a simple subject as the technique of performing intradermal tests (p. 237). Among the precautions advised by the author are that no two biologically related substances should be used simultaneously for testing. This would be acceptable as justifiably cautious if the author had not selected as his examples goose and chicken feathers. Feathers are among our weakest allergens. Systemic reactions to them are either rare or unknown. A less understandable error in this section is the advice to withdraw the plunger (intracutaneous tests!) and observe for blood as a precaution against the needle being in a blood vessel before injecting the materials. A dermatologist of Urbach's experience could not have written such advice except through inadvertent error.

More serious than these objections is the emphasis on "deallergization" (primarily by oral therapy) as a method of preference over hyposensitization. Here Urbach emphasizes his use of protein digests, propeptans to "deallergize" most allergic conditions. Despite the fact that Urbach introduced this form of "propeptan" therapy in 1930 workers in this country still have not accepted this method of treatment. Most reliable workers who have experimented with it reject it as a method of treatment although they admit that their experience with this form of therapy is limited. Urbach's explanation of these carefully qualified but unfavorable reports is that these workers used their own protein digests rather than those prepared by Urbach (p. 268). This defensiveness is unjust to such careful workers as Bray, Rowe, Vaughn and C. J. White.

Part II consisting of about 260 pages is devoted to a thorough discussion of the etiologic agents of allergic diseases. The classic division used is that of inhalants, ingestants, injectants, contactants, physical agents and infectants. These subjects are likewise thoroughly presented. The part which the reviewer considers especially excellent is the discussion of allergy and immunity in acute and chronic diseases. The principles of allergy and immunity as revealed in the studies of

tuberculosis and syphilis are particularly well correlated with what is usually classified as the "allergic diseases."

Finally, part III presents the symptomatology and therapy of allergic diseases. This part covers about 450 pages, of which the last hundred are relatively unimportant since they cover the more unusual and questionable allergic entities, as allergy of the eye, the ear, the nervous system, the cardiovascular system and the joints. In this section also the one serious objection the reviewer finds is the disproportionate importance placed by Urbach on oral therapy in such a condition as seasonal hay fever. From the material presented here the reader inexperienced in allergy cannot help but conclude that this is the method of choice both for ease, safety and for optimum results. This is certainly not accepted by most allergists in this country.

Summarizing this is an excellently organized work presenting the literature of allergy in a very thorough and lucid fashion. It emphasizes a correlation of the principles of immunology as studied in chronic and acute infections with the immunology of the allergic conditions. The faults found in this book—the use of many unusual and newly coined terms and the overemphasis of the value of oral therapy—may well be disregarded by the critical reader in view of its general excellence.

Mass Miniature Radiography A Practical Handbook By R. R. Trail M.C. M.A. M.D. Wing Commander R.A.F. V.R. H. J. Trenchard M.B. Ch.B. M.R.C.P. Squadron Leader R.A.F. and J. A. Kennedy M.B. B.S. M.R.C.S. Flying Officer R.A.F. V.R. Foreword by Lord Dawson of Penn. P.C. C.V.O. K.C.B. Cloth Price 8s. 6d. Pp. 96 with 24 illustrations London J. & A. Churchill Ltd. 1948

This book contains complete information for setting up and operating equipment for the making of miniature films of the chest. Chapters are devoted to administration, apparatus, processing and storage of films, viewing methods, interpretation, correlation of findings and consequent disposal of patients. The authors point out that the Canadian army has used full size x-ray films and that the Metropolitan Life Insurance Company of America has combined such films with fluoroscopy in mass survey work. The idea of photographing the image on a fluorescent screen on a photographic film was first attempted in 1896. However, it was not until 1934 that de Abreu of Brazil used it in making mass examinations. The authors describe two types of film now in common use, one 4 by 5 inches in size and the other approximately 1 inch square on a 35 millimeter film. They consider the former superior in technical excellence but prefer the 35 millimeter film for mass radiography because of greater speed with which exposures can be made. Attention is called to the use of these miniature films in the United States Army and Navy, and their value in the civilian population is emphasized. Their opinion as to the value of an x-ray film in diagnosis is expressed as follows: "Miniature films or large films are not generally speaking sufficient evidence on which to found a diagnosis. If they are so used the results are likely to be disastrous. Diagnosis must be based on a review of clinical, radiological and pathological evidence, and it is essential that this fact be ever borne in mind. In other words, mass miniature radiography is a means of picking out those individuals who are in need of a full, clinical examination." This statement was formulated after the authors had made 150,000 examinations including the follow-up to final diagnosis of those discovered to have abnormalities on x-ray films. The conclusion of these authors with reference to diagnosis coincides with that of clinicians who are expert in chest diseases in this country.

The authors call attention to the extreme tiring of the eyes and the mental fatigue which results when viewing miniature films. They find that 350 to 450 films represent the extreme limit that any one can be expected to do in a day and that one hour of continuous viewing is the maximum that should be attempted. Clinicians who are beginning this work should not attempt the reading of more than 60 films at one session. However, as experience increases, one can read about 150 to 200 films at one time without experiencing extreme fatigue.

In the chapter on interpretation of miniature films they say: "In the ordinary way miniature films cannot be described as diagnostic. They should not be considered as showing more than an abnormality which requires a large film and other investigations to ascertain the nature of the lesion present. Consequently, the report on a miniature film must usually be

the kidney in place may be tried. If this is unsuccessful and elevations of pressure persist, nephropexy is justified, since otherwise persistent and progressive essential hypertension may be anticipated.

TREATMENT OF CONGENITAL SYPHILIS WITHOUT INTRAVENOUS INJECTIONS

To the Editor—A girl aged 15 years has interstitial keratitis. I treated her in infancy for syphilis but the parents stopped the treatments before she was cured. She has had no treatment in the meantime. She weighs 230 pounds (104 Kg) and it is impossible to find any veins in which to give intravenous therapy. Will you please outline the treatment this patient should have? All treatment will have to be intramuscular or by mouth.

M D, Iowa

ANSWER—In view of the impossibility of administering intravenous treatment to the patient, a girl aged 15 with congenital syphilis and interstitial keratitis, the best plan of treatment would be initially with induced tertian malaria during which the patient is allowed to have ten to twelve paroxysms of fever, followed immediately on its termination by bismuth arsphenamine sulfonate (bismarsen) administered intramuscularly twice weekly in alternate buttocks in a dosage of 0.2 Gm to a total of twenty injections in the course. On completion of the bismarsen course, bismuth subsalicylate in oil should be given intramuscularly for eight to twelve weeks in a dosage of 0.2 Gm, the injections being given at weekly intervals. Potassium iodide should not be used.

Further than this it is impossible to plan without knowing the results of the suggested treatment on the interstitial keratitis. More treatment must be given, but its character will depend on the therapeutic result obtained.

ROENTGEN IRRADIATION FOR MASTOIDITIS AND OTITIS

To the Editor—Has the x-ray radiation treatment of acute mastoiditis and otitis media ever been used in the majority of ear clinics in the country? What is the present status of this treatment?

Nathan Sedofsky, M D, Oteen, N C

ANSWER—X-ray radiation therapy for acute otitis media and acute mastoiditis has never been widely used in the majority of ear clinics in this country. There has been no fundamental change in opinion as to the way these diseases are to be handled. It is no doubt true that here and there individuals have tried x-ray therapy. In properly selected cases gratifying results have been obtained.

It would be impossible however, without a poll of all the major clinics in the country, to know how many of them have used x-ray treatment in the conditions named and to what extent they have employed it. Judging by one large community it is not used extensively nor is it the treatment of choice.

In early cases x-rays may be used properly empirically and experimentally. It is precisely this type of case that yields so well to sulfonamide therapy, however, and which has a high incidence of natural recovery. There can be no useful outcome in debating the merits of special therapy under these circumstances. Able practitioners working under proper controls and using good judgment may try at times any reasonable method of therapy.

NORMAL PYELOGRAM IN PRESENCE OF IMPAIRED RENAL FUNCTION

To the Editor—A woman was admitted to the urologic service because of numerous red and white cells in the urine. In the course of a routine examination the resident said he found a large kidney on the left side in addition to a few white and red blood cells in the urine. An intravenous pyelogram was of little assistance in making a diagnosis as little dye appeared on the left side. Cystoscopy revealed a normal bladder and ureters, the latter were readily catheterized for a distance of 25 cm. The urinary outflow was normal on both sides. A functional test was normal on the right, the dye appearing in six minutes. No dye appeared on the left side in twenty-five minutes. A retrograde pyelogram was made, 10 cc being injected on both sides with no pain. A roentgenogram shows normal outline of both kidneys. Would you kindly explain the poor function of the left kidney in view of the normal retrograde pyelogram?

M D, New York

ANSWER—Failure of visualization of the renal pelvis on one side occasionally is observed in the excretory urogram for which there is no adequate explanation. In a few of these cases, when a subsequent excretory urogram is made after an interval of several weeks or months the visualization will have become normal for no apparent reason. In many cases failure of visualization can be explained by temporary obstruction in the ureter, often a small ureteral calculus, which is nonopaque and is not visualized in the plain roentgenogram. Such a calculus might

also be the cause of the red and white cells which appeared in the urine in the case in question. The fact that the ureteral catheter when introduced met with no obstruction would not exclude a calculus. In fact, the failure of secretion of dye from that kidney in the presence of secretion of fluid would tend to corroborate the hypothesis of reflex irritation or slight obstruction caused by intraureteral blockage. Such obstruction may be sufficient to interfere with renal function but still cause no visible deformity in the outline of the renal pelvis or ureter. In most of these cases of ureteral blockage the outline of the kidney in the plain roentgenogram appears somewhat larger than that on the other side, apparently due to congestion.

There may, of course, be some kind of intrarenal lesion present. An infarct or some other type of cortical lesion might also cause failure of secretion of the dye without visible deformity in the pelvic outline. Repeating the differential functional tests and the excretory urograms at intervals would be of considerable interest.

POSSIBLE EFFECTS OF EPINEPHRINE AND EPHEDRINE ON CUTANEOUS TESTS WITH ALLERGIC SUBSTANCES

To the Editor—A patient with hay fever is relieved by an ephedrine-amytal capsule. Are the cutaneous tests interfered with if this capsule is used immediately preceding the tests?

H F Kahler, M D, Tacoma, Wash

ANSWER—Swineford and Grove (*J Allergy* 8:475 [July] 1937) have pointed out that the maximum effect of an injection of epinephrine on the size of cutaneous tests occurs within fifteen to thirty minutes and is gone in an hour or less. They therefore believe that it is not necessary to postpone these tests longer than one hour after a single therapeutic injection. When the patient is receiving frequent injections of epinephrine, however, especially if given in oil, cutaneous tests are certain to be lessened in size and should not be performed at that time.

There is no definite report in the literature on the effect of ephedrine on cutaneous tests, but since ephedrine acts in similar fashion to epinephrine it too almost certainly diminishes the size of cutaneous tests. This is especially important with patients who take ephedrine more or less continuously.

It would be wise to avoid both ephedrine and epinephrine for at least twenty-four hours before the tests are carried out.

EPIDIDYMITIS FOLLOWING STRAIN

To the Editor—Could you give me the pathology of a condition which I have been seeing frequently in the past two years but which I do not find described in textbooks on urology? It occurs only in laborers, usually doing heavy work, who give a story of having felt a sharp pain in the lower part of the abdomen on one side or the other while straining as in lifting a heavy weight, the pain frequently radiating down the spermatic cord to the testis. The following day the spermatic cord and sometimes the epididymis is also swollen, hard and tender. Some times only the upper pole of the epididymis is involved. Needless to say these are cases in which no evidence of gonorrhea is found, the condition being apparently traumatic in origin. Pain and tenderness vary in severity, and the condition gradually subsides in about two weeks' time. As far as can be made out by physical examination, it appears to be the vas deferens itself which is thickened and tender. Torsion begins with a severe pain which lasts for a considerable period. The cord is always swollen, indurated and tender. In fact, the swelling seems to progress from above downward, as frequently the cord and only the upper part of the epididymis are involved. I have seen so many cases of this condition that I regard it as a clinical entity.

M D, Puerto Rico

ANSWER—As nearly as can be determined from the description, this is an acute epididymitis. The history is typical, namely pain in the lower part of the abdomen on one side or the other and frequently radiating down the spermatic cord to the testis, followed by changes in the epididymis, the epididymis being tender, hard and swollen. The fact that these cases show no evidence of gonorrhea is irrelevant.

Most urologists believe that when a patient develops an epididymitis he has infection in the seminal vesicles. This infection may or may not be gonorrheal in origin. As a matter of fact most cases of seminal vesiculitis and chronic prostatitis are nongonorrheal in origin.

Acute and chronic epididymitis that fit into this category are described in textbooks on urology. How much one should ascribe the onset of the condition to the lifting of heavy weights is open to question. If persons do not have a previous infection in the vesicles and lift a heavy weight, nothing would happen.

The second possibility is torsion of the spermatic cord with torsion of the testis, but the description given does not fit in with torsion of the spermatic cord. This condition has been written up a good many times in the *Journal of the Urology* within the past ten years.

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SPIROCHETAL JAUNDICE

A REPORT ON FIFTEEN CASES INCLUDING TWO
CASES OF LEPTOSPIRA CANICOLA INFECTION

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Spirochetal jaundice has been reported from practically every country in the world¹. Despite its universality, the number of cases reported in North America appears to be disproportionately less than that reported from continental Europe. In the interval 1924-1937 808 cases were diagnosed in the Netherlands¹. Between 1924 and 1932 263 proved cases were found in France². In the Netherlands the diagnosis was established in 374 cases between 1924 and 1938, and there were at least 248 cases in Great Britain between 1922 and 1939³. In contrast, up to 1940 Stiles and Sawyer⁴ state that they were able to collect only 73 authentic cases from North America, with half as many additional cases on which laboratory data were regarded as inadequate. Larsen⁵ states that up to August 1941 98 cases of spirochetal jaundice had been observed in Puerto Rico and in fourteen states and the District of Columbia in the United States.

Many authors⁶ feel that the condition is not rare in this country. Why then is the disease so infrequently diagnosed? In this article we wish to show that spirochetal jaundice has been overlooked in the past to emphasize certain interesting features of the disease which have come under our observation and to point out some of the problems in differential diagnosis which occurred in 15 cases that were recently observed at Charity Hospital.

It is most certain that vectors harboring leptospira are not lacking in the United States. Raven,⁷ during the months of May and June 1941, found positive agglutinations for leptospiras in 28 per cent of serums collected from dogs in Philadelphia. Serums of dogs from rural communities in Pennsylvania showed 38.1 per cent positive agglutinations. In these animals data relative to clinical history were not available, so that it was

impossible to tell whether a clinical or a subclinical infection had preceded the seropositive reactions. Serologic tests performed on supposedly normal dogs in San Francisco and northern California gave positive reactions in 34 per cent⁸. In this study, 14.3 per cent of dogs from a rural community showed latent infection. Blood of dogs from Louisiana, Nebraska, New York, Pennsylvania and Virginia were reported as giving positive agglutinations for *Leptospira icterohemorrhagiae*⁹.

Rats have been found to be infected to no less an extent in the United States. Sampling of 467 rats in San Francisco yielded renal leptospira by dark field examination in 176 instances (35 per cent). Meyer and his associates⁸ state that renal leptospira infection has been definitely established in Washington, D C 10 per cent, in Nashville, Tenn, 10 per cent, in New York, 17.2 to 21.9 per cent, in Albany, N Y, 40 per cent, in Baltimore, 7 per cent, in Chicago, 3 to 5 per cent, in Rochester, N Y, 38 per cent, and in Detroit, 16 per cent.

Recently, examination of mine water and muck revealed leptospiras morphologically indistinguishable from *Leptospira icterohemorrhagiae* in a single mine in Alabama where 14 human cases of spirochetal jaundice occurred in a period of two and a half years¹⁰. Non-pathogenic saprophytic spirochetes occur in natural waters all over the world¹. Although there is a disagreement concerning this possibility, apparent transformation of nonpathogenic strains to virulent forms after culture or animal passage has been described¹¹.

It might be supposed that the murine strains which have been found in such a large proportion of American rats were nonpathogenic. However, Langworthy and Moore¹² have demonstrated that strains in New York State were virulent.

In addition to the rat and dog, it has been shown that leptospirosis may occur in field mice, cats, pigs, foxes and horses². Although leptospiras have not been demonstrated in these animals in the United States, it may be assumed, with the proportion of infected dogs and rats that has been demonstrated, that leptospirosis is present in these animals in at least a moderate percentage.

It has been pointed out by Ashe² that North Americans are not immune. The occupations which are described as being commonly affected in Europe are in the main the same for the reported American cases. It is our impression that typical cases of spirochetal jaundice have always been present in Louisiana if not

From the Department of Medicine Tulane University of Louisiana School of Medicine, and Charity Hospital of Louisiana.

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12. Baerman and Zuelzer cited by Walch Sorgdrager¹ p 228.

13. Langworthy V and Moore A C. A Study of *Leptospira Icterohemorrhagiae*. J Infect. Dis. 41: 70 (July) 1927.

the entire United States. Ideal situations for exposure exist for the trappers and fishermen and for the rice and cane field workers of southern Louisiana. Older clinicians have told us that in their opinion numerous cases of spirochetal jaundice have been confused with yellow fever in the past. In this connection it is an interesting commentary that Stimson¹³ discovered, in 1905, "spirochetes" in the organs of a Louisianian dying from what was thought to be yellow fever. Such mistakes are not difficult to make because clinically and pathologically¹⁴ spirochetal jaundice and yellow fever may be quite similar.

Ashe believes that the clinical manifestations are not well enough known in this country for the disease to be considered in the differential diagnosis. Other authors¹⁵ feel that the diagnosis is chiefly dependent on the laboratory and that the fault lies in the fact that too few American laboratories are equipped to establish the diagnosis.

An occupational history has usually been present in the reported cases. In most instances a history of moist, damp or wet environment is obtainable. Frequently immersion, accidentally or intentionally, in a polluted stream, has resulted in the disease. Consequently, occupations commonly encountered in the disease are those of sewer workers, trapped coal miners, canal workers, fish workers, rice-field workers and cane cutters.

The disease is a severe one and is typically characterized by an acute onset which is associated with chills, headache and extreme muscle pain with nausea and vomiting. The majority of patients are prostrated. The amount of fever is variable, ranging from 99 to 104 F. Abdominal pain localized in the epigastrium or right upper quadrant is frequently a prominent feature of the disease. In the latter part of the first week jaundice and enlargement of the liver usually become apparent. Conjunctivitis and injection of the pharynx have been described by many authors. A moderate leukocytosis is usually present. Renal function is usually affected, oliguria, anuria, albuminuria, casts and cells may occur and there may be retention of the nitrogenous factors in the blood. A hemorrhagic tendency or anemia is apparent in about half the cases. In seven to thirteen days there is improvement in the general symptoms and convalescence begins. In some instances a febrile relapse may occur at the beginning of the third week. Meningeal signs may be present.¹⁶

The diagnosis is essentially dependent on the laboratory.⁹ The leptospiras can be found in the blood in the first stage (seven to thirteen days). Immune bodies can be found between the twelfth and the seventeenth day and are present in increasing concentration after this time. The organisms may be found in the urine after the second or third week. Inoculation of guinea pigs or hamsters after the technic described by Ashe² may facilitate diagnosis either from the blood or from the urine in the appropriate period. We wish to emphasize here the important work of Schultz,¹⁷ who demonstrated the ease with which the inexperienced investigator may be misled in his interpretation by "pseudospirochetes" observed in dark field preparations of blood.

CHARITY HOSPITAL CASES

Stimulated by the characteristic findings shown by 4 white male patients¹⁸ studied in the Tulane Medical Service at Charity Hospital during August and September 1941, an attempt was made to ascertain how many cases of spirochetal jaundice had been overlooked in the interval Sept 1, 1939 to Sept 1, 1941. Accordingly the charts of 463 patients whose discharge diagnoses could possibly have been confused with spirochetal jaundice were reviewed. Of this number, 54 records were sufficiently suggestive to warrant recall of the patients for an agglutination test. Blood from 40 patients of this group was sent to the National Institute of Health. Three of the serums were found to have a diagnostic titer of agglutinins against *Leptospira icterohemorrhagiae*. The case histories of these patients follow in brief. Comparison with the other cases on a chart which outlines the salient features of the 15 cases recently observed at Charity Hospital show that the following 3 cases are typical. It will be noted that these cases did not constitute an epidemic but occurred over a period of two and one-half years and in widely separated parts of southern Louisiana.

F. H. (case 5), a white man aged 58, a laborer, admitted to Charity Hospital on May 7, 1941, complaining chiefly of jaundice, had been noted as being icteric six days prior to admission. Four days later anorexia developed and later he became nauseated and vomited at frequent intervals. The vomitus was "streaked with red." Physical examination revealed that he was poorly nourished, asthenic and "yellow as a canary." He was acutely ill but afebrile. The sensorium was cloudy. There was old, clotted blood present about the mouth. The mucous membranes were soft and bleeding. The teeth were carious, and oral hygiene was poor. The pharynx was injected. The heart and lungs were normal. The remainder of the physical examination was negative except for small areas of hemorrhagic extravasation into the skin at various points over the body.

The red blood cell count was 3.5 million, the white blood cell count was 7,000 with 93 per cent polymorphonuclear leukocytes. The platelet count was 310,000. Urinalysis revealed 1 plus albumin and 1 plus bile. The blood urea nitrogen was 42.7 mg. per hundred cubic centimeters. The icterus index on admission was 195 units and rose to 300 units.

The patient was discharged on May 30 with the diagnosis of acute catarrhal jaundice. He was subsequently recalled, and blood submitted to the National Institute of Health on April 25, 1942 was reported as positive against *Leptospira icterohemorrhagiae* in a dilution of 1:1,000.

C. B. (case 10), a white man aged 39, a farmer, admitted to Charity Hospital on July 31, 1940, suffered from "indigestion" after every meal one week prior to admission, with much abdominal pain and belching. On the following day fever developed and he had two chills which were associated with pain in the extremities, backache and a severe headache. The following day it was noticed that he was jaundiced. In the next few days he noticed that his urine had become red. On admission he was well oriented and presented well defined jaundice. The only positive physical conditions beside icterus were carious teeth and slight tenderness in the right upper quadrant.

The red blood cell count was 1.81 million. A fragility test revealed hemolysis beginning at 0.36 and completed at 0.24. Urinalysis revealed 2 plus bile. The icterus index was 100.

The patient was discharged on August 30 with a diagnosis of acute catarrhal jaundice. He was recalled on Jan 30, 1942, and agglutinins were found against *Leptospira icterohemorrhagiae* in a dilution of 1:1,000.

B. O. (case 11), a Negro youth aged 19, a porter, admitted to Charity Hospital on July 25, 1941, had been suddenly seized with a headache and generalized aches and pains five days

13 Stimson, A. M. A Note on an Organism Found in Yellow Fever Tissue, *Pub. Health Rep.* 22: 541, 1907.

14 Harris, W. H. The Pathology of a Case of Weil's Disease with Comparative Study of Yellow Fever, *Arch. Path.* 34: 663 (Oct.) 1942.

15 Jeghers, Houghton and Foley.
16 Rathbun, H. K., and Waghelestein, J. M. Weil's Disease Report of Six Cases, *Ann. Int. Med.* 15: 395 (Sept.) 1941.

17 Schultz, E. W. The Pseudospirochetes Derived from Red Blood Cells, *J. Lab. & Clin. Med.* 8: 375 (March) 1923.

18 Wilen, C. J. W., Snively, J. R., and Bruno, F. E. A Report of Recently Observed Cases of Weil's Disease, *New Orleans M. & S. J.* 91: 338 (Jan.) 1942.

prior to admission. In a short while he became nauseated and vomited. Four days later his family noticed that his scleras were yellow. Because of the persistent nausea and vomiting the patient came to the hospital.

On admission his temperature was 99 F. The scleras were icteric and there were subconjunctival hemorrhages. There were a few palpable submaxillary nodes. A few crepitant rales were present at the base of the right lung. The liver was palpable two fingerbreadths below the costal margin. The remainder of the physical examination was negative.

The red blood cell count was 3.9 million. The white blood cell count was 15,700 with 82 per cent polymorphonuclear leukocytes. The prothrombin time was 73 per cent of normal. Urinalysis revealed 3 plus albumin and a trace of bile. Bile stained casts were present. The blood urea nitrogen was 77.7 mg per hundred cubic centimeters. The icterus index was 50. On August 16 the patient was discharged with a diagnosis of acute catarrhal jaundice. The patient was subsequently recalled, Feb. 3, 1942, and agglutinins were found to be present in the patient's serum against *Leptospira icterohemorrhagiae* in a dilution of 1:10,000.

We believe that the following conditions have been most commonly confused with leptospirosis: catarrhal jaundice, typhus fever, malaria, acute yellow atrophy, toxic hepatitis, amebic hepatitis, yellow fever and obstructive jaundice with associated cholangitis. In the first world war many cases of spirochetal jaundice¹ were described as occurring in French, Italian, British and German troops. Undoubtedly if trench warfare is resorted to in this war numerous cases will develop in rat-infested trenches which are frequently contaminated with stagnant water. It has been shown¹⁰ that leptospiras can live for a period longer than three weeks in stagnant water that is slightly neutral or alkaline.

BRONCHOPULMONARY FEATURES

A point which deserves further emphasis is the ease with which the disease can be confused with acute pneumonia. The sudden onset with chills, fever, cough and expectoration of sputum, which is often blood tinged, combined with physical and radiologic evidences of pulmonary infiltrations, can be indistinguishable from atypical bacterial, virus or influenza pneumonia. The diagnosis is especially difficult in the anicteric or preicteric case. The development of icterus in such a severely ill patient, especially if it is associated with myalgia, hemorrhagic tendencies and appropriate urinary findings, should strongly suggest spirochetal jaundice. If jaundice appears several days after the institution of sulfonamide therapy, the diagnosis of toxic hepatitis as a complication of either pneumonia or sulfonamide therapy may be easily entertained and the true condition overlooked. Just this sequence of events occurred in 4 of our cases.

An illustrative case is the following:

H. G., a man aged 34, a warehouse workman, became suddenly ill with fever, chills and headache on Aug. 18, 1941. He began to expectorate blood tinged sputum within a few hours and was treated for pneumonia by a physician who gave the patient sulfathiazole. This medication was discontinued on the fifth day of his illness because of the appearance of well defined jaundice. During this time there were repeated chills and fever to 104 F., and the patient was disoriented at times. Urine was noted to be very dark brown but at no time was oliguria observed. The patient was admitted to the hospital on the ninth day, at which time his pulse was 120, respirations 24 and blood pressure 130/20.0. Save for deep icterus and a barely palpable tender liver, there were no positive physical manifestations on admission. The white blood cells numbered 12,400 with 85 per cent polymorphonuclear

leukocytes. The urine showed 4 plus bile and urobilinogen to a dilution of 1:10, the icterus index was 333 and the blood urea nitrogen was 80. For four weeks in the hospital the patient's condition ran a continuously febrile course with chills and fever to 104 F. Repeated small transfusions were given, and near the middle of the fourth week of illness 250 cc of blood from a patient who had recovered from spirochetal jaundice two years previously was given. No dramatic results followed, but the patient's temperature gradually fell until near the end of the sixth week he became afebrile and definitely convalescent. On the twenty-third day of illness the patient's serum agglutinated *Leptospira icterohemorrhagiae* to 1:100,000 and on the thirty-fourth day to 1:1,000,000.

CENTRAL NERVOUS SYSTEM FEATURES

The meningeal form of leptospirosis was discussed in detail by Walch-Sorgdrager.¹ He states that it is characteristic of the meningeal form that there is nothing to suggest spirochetal jaundice. There are variable degrees of meningeal signs and symptoms in the cases reported. The spinal fluid is usually under increased pressure, it is nearly always clear, it is weakly positive for albumin and the number of cells is increased. Blood agglutination tests are positive. Forty-three per cent of our patients had a severe headache, and, of the 14, 4 had delirium or a severe degree of restlessness. Spinal puncture in 2 cases was negative. Patient 12 was disoriented and had a convulsion followed by weakness of the right hand. Lumbar puncture was not performed in this instance.

VARIATION IN SERUM TITER

In the majority of our patients the titer of agglutinins increased as convalescence occurred. In 1 case (L. D., case 14) the titer dropped from 1:1,000 to 1:100 in twenty-one days. In another (A. E., case 9) agglutinations on blood were positive in a dilution of 1:30,000 in October 1939. When the patient was recalled on Jan. 19, 1942 the agglutinations were negative. As can be seen from the following brief report, this history is typical for spirochetal jaundice.

A. E., a Negro youth aged 19, a laborer in the rice fields and a trapper in the off season, admitted to Charity Hospital Oct. 10, 1939, became acutely ill five days prior to admission. He was seized with epigastric pain which shifted to the right upper quadrant. This was associated with chills, fever, nausea and vomiting. There were severe muscle pains and headache. On admission the patient had herpes and conjunctival hemorrhages and he became definitely jaundiced. On admission the pharynx was hyperemic. The base of the right lung was dull to percussion, and tubular breathing was thought to be present. The liver was palpable. The white blood cell count was 18,300 with 86 per cent polymorphonuclear leukocytes. Blood urea nitrogen was 22.4. The icterus index was 300 units. Urinalysis revealed 3 plus albumin, 3 plus bile, 3 to 5 red blood cells and white blood cells with an occasional bile-stained cast per high power field. The electrocardiogram was interpreted as showing evidence of myocardial damage with a slightly long PR interval and QT interval. Roentgenograms of the chest were negative. Serum sent to the National Institute of Health was reported as positive in a dilution of 1:30,000 in October 1939. The patient was recalled and serum taken on Jan. 19, 1942 was sent to the National Institute of Health and was reported as negative.

This shows that the power of agglutination can be lost in spirochetal jaundice and suggests that perhaps immunity may likewise be lost.

LEPTOSPIRA CANICOLA INFECTIONS

The serum in 2 of our cases (12 and 15) agglutinated against the *Leptospira canicola* in a dilution of 1:10,000 and 1:1,000,000 respectively and against the *Leptospira icterohemorrhagiae* in a dilution of 1:1,000 and

¹⁰ Davidson, L. S. P., Campbell, R. M., Rae, H. J. and Smith, J. *Weil's Disease*. Brit. M. J. 2: 1137 (Dec. 22) 1934.

1 1,000,000 respectively Ashe in his comprehensive review on spirochetel jaundice states that up to May 1941 only 1 human case due to *Leptospira canicola* had been reported in the United States Though our patients had no knowledge of contact with jaundiced dogs or other animals, it is interesting that in the three months prior to the illness of patient 12 local veterinarians⁹ had observed at least 9 cases of icterus in dogs Unfortunately we were unable to secure blood for agglutinations or tissues for examination from these jaundiced animals Lester and his co-workers¹⁰ in their investigation of an epidemic of spirochetel jaundice occurring in mine workers attempted to determine the possibility of dogs serving as a reservoir of infection The examination of blood and tissue sections in jaundiced dogs provided by local veterinarians failed to demonstrate leptospira Walch-Sorgdrager states that the canicola disease has certain special characteristics Severe symptoms were uncommon and jaundice was

and hyperemic The oropharynx was injected The lungs were clear and resonant There was slight enlargement of the heart The rate and rhythm were regular No murmurs were heard The liver was just barely palpable The remainder of the physical examination was not worthy of note The red blood cell count was 4,900,000, the white 13,600, with 65 per cent polymorphonuclears Urinalysis showed 3 plus bile and an occasional white cell The icterus index was 129 units The blood urea nitrogen was 69.6 mg per hundred cubic centimeters On March 31 agglutinations performed by Dr Elliston Farrell were positive in a dilution of 1:300 against *Leptospira icterohemorrhagiae* A sample of serum sent to the National Institute of Health on April 14 was reported as being positive in a dilution of 1:10,000 against *Leptospira canicola* and 1:1,000 for *Leptospira icterohemorrhagiae*

HEMORRHAGIC DIATHESIS AND GASTRO- INTESTINAL FEATURES

One of the essential pathologic features of spirochetel jaundice is a hemorrhagic diathesis which presumably results from a local toxic effect of the spirochete on the capillary wall The prothrombin time of the blood may or may not be abnormal Six of our patients had prothrombin determinations during the height of their illness Four of these had an obvious hemorrhagic diathesis and the prothrombin determinations were 75 per cent, 83 per cent, 73 per cent and 100 per cent of normal, respectively The determination of 100 per cent normal was made on patient 8, who had severe melena and hematemesis Two patients who showed no evidence of a bleeding tendency had readings of 60 per cent and 95 per cent respectively This hemorrhagic tendency may cause minute hemorrhages in the skeletal muscles, lungs, liver, stomach, pancreas, adrenals, peritoneum and spleen In the more severe cases purpura, hematuria, hematemesis and melena may be present Fully one half of our patients showed hemorrhagic phenomena These manifestations consisted of purpura, petechial and subconjunctival hemorrhages, bleeding mucous membranes, hematemesis and melena, and 1 patient had a uterine hemorrhage

As a consequence of these factors and notably from hemorrhage into the intestinal wall and an inflammatory reaction in the duodenum and around the ampulla of Vater, severe gastrointestinal symptoms may develop All but 1 of our patients complained of abdominal pain Rigidity of the abdominal wall was present in 4 cases, and in 9 cases nausea and vomiting were present for a varying length of time Patient 8 had melena and hematemesis and required five blood transfusions Patient 13 entered the hospital with severe abdominal pains, rigidity, nausea and vomiting The leukocyte count was 50,000 The physical examination indicated an acute abdominal emergency, but the nature of the onset and course of the disease and our previous experience with spirochetel jaundice were the determining factors in a conservative policy Twelve hours later the acute symptoms had subsided and the leukocyte count had fallen to 30,000, and the patient went on to uneventful convalescence In connection with this case it is of interest to point out the experience of White and Prevost²¹ A cholecystogastrostomy was done on their patient two months after the onset of spirochetel jaundice and the gallbladder was found to contain hemorrhagic material which on dark field examination was positive for leptospiras Another case reported by Gaines and Johnson²² on operation showed an intramural obstruction



Fig 1—Section of kidney of O D Arrows indicate *Leptospira*

rare Meningeal symptoms occupied a prominent place in 4 of the 12 cases reported by him Because of the rarity of *Leptospira canicola* disease, case 12 will be described in brief

E R (case 12), a white man aged 63, a night watchman, admitted to Charity Hospital March 25, 1942, stated that two weeks prior to admission he had an infection of the upper respiratory tract with mild malaise for a few days and only a slight cough About ten days prior to admission his temperature was 102 F The local physician who was called said he had a "touch of pneumonia" and gave him white powders and a cough medicine His fever subsided in one or two days In one week the patient's wife noticed that he had a yellowish tinge to his skin At this time his urine became "red as blood" He was voiding small amounts of urine frequently He made satisfactory progress until the day of admission, when his wife noticed that he was cloudy mentally Shortly after this he had a mild convulsion He regained consciousness in a few minutes but was mentally hazy on admission

Physical examination revealed that he was well nourished and was uniformly jaundiced There were numerous excoriations over the abdomen and back The scleras were icteric

21 White J J, and Prevost, J V Weil's Disease Report of Three Cases Including Marked Anatomy of One Case and Brief Review of Pertinent Literature, Ann Int Med 15 207 (Aug) 1941
22 Gaines A R and Johnson R P Weil's Disease Report of Seven Cases Arch Int Med 60 817 (Nov) 1937

of the ductus choledochus consequent to inflammation of the duodenal wall and the ampulla of Vater. Appreciation of the various aspects of the gastrointestinal manifestations of this disease are of great importance in the differential diagnosis during the acute stage.

CARDIAC AND ELECTROCARDIOGRAPHIC FEATURES

Symptoms and findings referable to the heart are not uncommon in our experience. The German literature cites numerous instances of pathologic changes in the heart consisting of myocardial necroses, fibrous pericarditis, infarction and vegetative endocarditis. Descriptions of similar complications have not appeared in the American literature to our knowledge. In our 1 case that came to autopsy (case 4) scattered petechial hemorrhages were observed in the endocardium. Microscopic examination showed fibrinous exudate on the epicardium with collections of lymphocytes in the underlying connective tissue. The myocardium showed scattered areas of fragmentation and there were areas containing free red blood cells in the stroma.

We have observed the following clinical conditions during the acute stages of the disease: gallop rhythm, pericardial friction rub, enlargement of the heart, severe sinus tachycardia and premature beats. Most of these findings disappeared during convalescence. Electrocardiograms were taken on 5 of our patients and among the significant findings noted were prolongation of the QT interval, defective auriculoventricular conduction, low T waves, blocked auricular beats and prolonged PR intervals. Electrocardiograms taken during convalescence showed a gradual return to normal.



Fig 2—Section of heart of O D. Note transverse fragmentation of myocardial fibrils. Interstitial edema and hemorrhage are also present.

A brief report of our fatal case referred to is given here. The pathologic changes in this case have been described in detail by Harris.¹⁴

O D, a white man aged 39, a dairy hand, noted the sudden onset of his illness on Sept 14, 1941, associated with severe pains in the muscles of his forearms, legs and back. Later in the day a shaking chill was experienced, and his temperature was found to be 101 F. Shortly thereafter he began to vomit greenish material, and by evening he had begun to experience

a dry hacking cough. This course continued for five days, during which time much smaller amounts of urine than normally were passed, and the patient became progressively more exhausted with chills and high fever. He was admitted on the fifth day of his illness when a definite icterus was observed. Physical examination was otherwise negative save for a tender

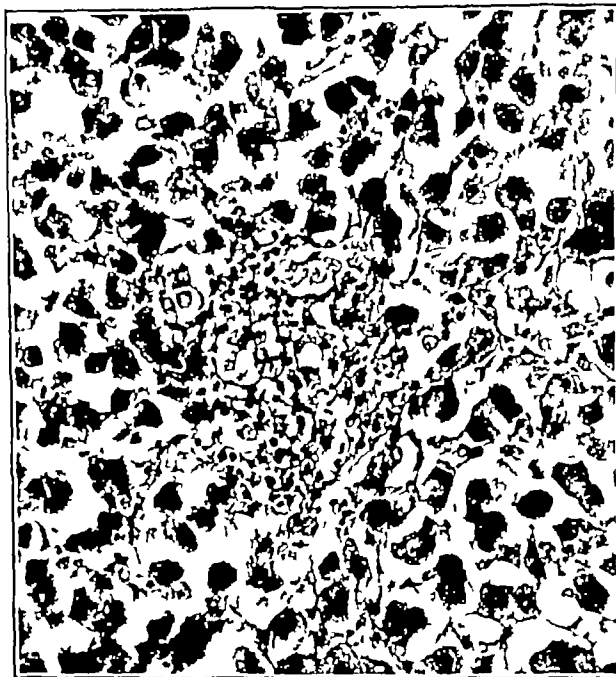


Fig 3—Section of liver of O D. Note central area of necrosis.

enlarged palpable liver. The white blood cell count was 15,000 with 97 per cent polymorphonuclear leukocytes, the urine showed 3 plus albumin, numerous red blood cells, many granular casts and 4 plus bile. Blood urea nitrogen was 16.1, dextrose 143 and the icterus index 110. A chest film revealed no abnormalities. While in the hospital the patient became steadily more toxic, his temperature went higher and he voided very little urine. On the eighth day a pericardial friction rub was heard. Death occurred on the ninth day of his illness, when his temperature was 103 F. No urine was passed in spite of heroic measures to produce diuresis.

Autopsy revealed, among the essential findings, jaundice, petechial areas over the chest and ecchymotic areas over the parietal peritoneum. The liver was enlarged. Microscopic sections of the liver showed considerable disorganization of the arrangement of the liver cells, which occurred in groups of 2 or 3 cells rather than in continuous cords. These groups were interspersed with clumps of lymphocytes. The kidney sections showed a diffuse infiltration of lymphocytes between the glomeruli. The latter were small and showed large capsular spaces. Many endothelial lined spaces filled with blood were observed in the medulla and to a lesser extent in the cortex. Levaditi stains of the kidney showed many leptospiras. When the pericardial cavity was opened some fibrinous exudate was noted on the epicardium in the region of the right auricle. Microscopic examination showed fibrinous material with collections of lymphocytes in the underlying connective tissue. The myocardium showed areas of fragmentation. Free red blood cells were evident in areas of the stroma. Blood taken from the patient post mortem agglutinated *Leptospira icterohemorrhagiae* in a titer of 1:500.

COMMENT

We are inclined to agree with Ashe and his group that a clinical diagnosis of spirochetal jaundice is feasible, but we would like to add the qualification "with assurance only in typical cases." We feel that many cases are typical and will be missed unless the condition is considered and the proper laboratory studies are car-

ried out We wish to suggest that in any acute infectious condition in which agglutinations for other diseases are negative tests for leptospirosis be made

As Walch-Sorgdrager has pointed out, the clinical symptoms of diagnostic significance are

1 An acute infectious disease with acute onset, fever, headache and prostration 2 Severe myalgia appearing spontaneously and on pressure in the thigh, calves and back 3 Signs of liver damage 4 Signs of kidney damage 5 Leukocytosis 6 Epidemiologic information—immersion, occupation We feel that if any four of these features are present the diagnosis of spirochetal jaundice should be strongly entertained

SUMMARY AND CONCLUSIONS

There are some factors which might explain the increasing incidence of reported cases of human leptospirosis in North America It has been pointed out that spirochetal jaundice has been present in Louisiana since at least 1905 Salient features of 15 cases have been observed at Charity Hospital over a period of two and one-half years Interesting aspects are encountered in the differential diagnosis of these cases There is a high incidence of gastrointestinal symptoms and abdominal crises The similarity of spirochetal jaundice in its early phases to pneumonia makes it possible for the condition to be mistaken for hepatitis secondary to pneumonia or sulfonamide therapy Symptoms and clinical signs referable to the heart and the electrocardiogram have been encountered

OCCIPITOPOSTERIOR POSITION

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The occipitoposterior position is perhaps the most common and important abnormality in the mechanism of vertex presentations, occurring in approximately 25 per cent of all such presentations Its management has long been a matter of discussion Although the literature on the subject is voluminous and facts of some value have been derived from it, there will undoubtedly be many more contributions, for there will always be a posterior

The occipitoposterior position is probably much more common than is generally supposed I am convinced that many prolonged labors supposedly occipitoanterior were occipitoposterior in the beginning The reported incidence varies greatly Tweedy and Wrench¹ reported 121 cases in 15,167 deliveries (0.8 per cent), Williams,² 11.3 per cent in 5,000 cases, Scott,³ 14.04 per cent in 1,000 consecutive cases, Piper⁴ 17.1 per cent, Danforth,⁵ 25.1 per cent in 1,131 private deliveries In an earlier paper⁶ I reported 500 cases of occipitoposterior position in 3,966 deliveries, an incidence of 12.6 per cent D'Esopo⁷ noted that 19 per cent of all vertex presentations engaged in the posterior position In our series of 5,105 deliveries in St Ann's Maternity Hospital, including both private and general services, there were 600 cases of occipitoposterior position (11.76 per

cent) Detailed statistics of these cases will be found later in this paper

In vertex presentations the occiput, as a rule, lies at a lower level in the pelvis than the sinciput and consequently rotates forward even in cases in which

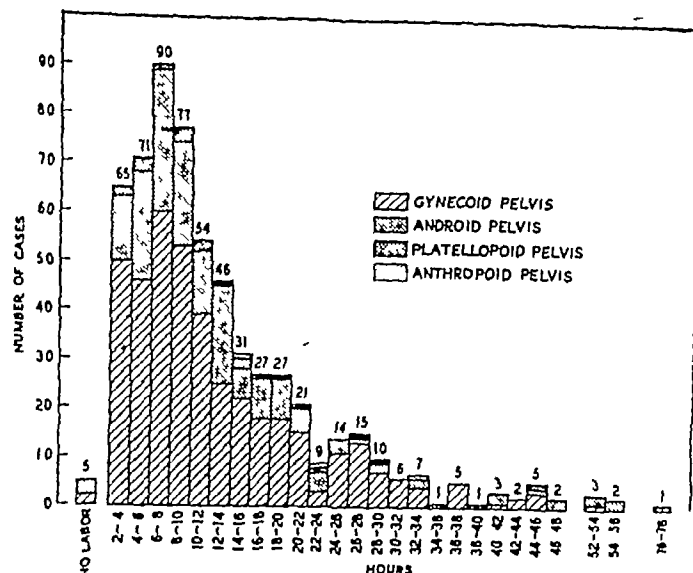


Chart 1—Correlation of length of first stage of labor with type of pelvis in cases of occipitoposterior position in two hour intervals

it was posterior in the beginning In a small proportion of cases the back is posterior at first and flexion is not complete, consequently the sinciput is as low as, or even a little lower than, the occiput As a result the sinciput tends to rotate forward, the face lying behind the pubes, and the occiput is carried into the hollow of the sacrum

Incomplete flexion of the head, and hence posterior rotation of the occiput, is more common when the occiput is primarily directed backward Herman⁸ explains this tendency as follows Extension of the head in occipitoposterior presentations comes about in two

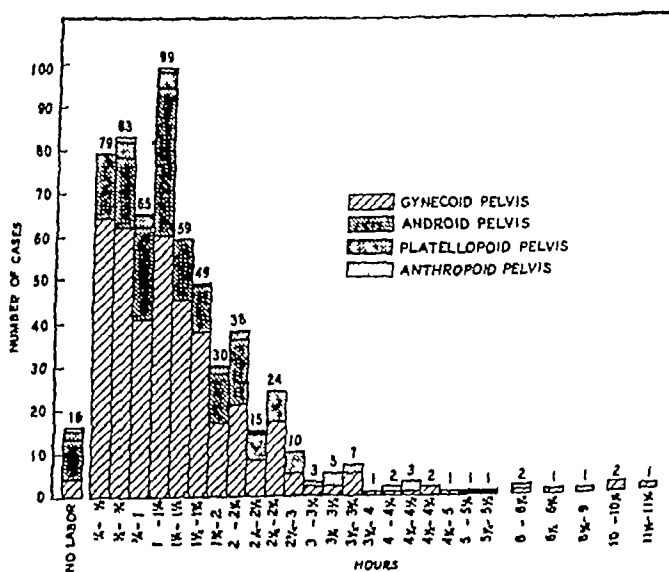


Chart 2—Correlation of length of second stage of labor with type of pelvis in cases of occipitoposterior position in fifteen minute intervals

ways (a) because the axis of the uterus and of the pelvic brim is concave behind, (b) because the greatest diameter of the head is behind the center The child must accommodate its attitude to the space in which it lies When the axis of the upper part of the uteropelvic canal is concave behind, then if the child's back

From St Ann's Maternity Hospital
1 Tweedy, E H, and Wrench G T Practical Obstetrics ed 7, revised by Bethel Solomons and N M Falkiner, London, Milford, 1937, p 336
2 Williams J W Obstetrics, ed 6, New York, D Appleton & Company, 1930, p 322
3 Scott, R A Am J Obst & Gynec 23:400 (March) 1932
4 Piper, E B, in Curtis, A H Obstetrics and Gynecology, Philadelphia, W B Saunders Company 1933, vol 2 p 86
5 Danforth, W C Am J Obst & Gynec 23:360 (March) 1932
6 Hennessy, J P Virginia M Monthly 63:663 (Feb) 1937
7 D'Esopo, D A Am J Obst & Gynec 42:937 (Dec) 1941

8 Herman, G E Difficult Labour ed 7 London Cassell & Co Ltd 1929 p 7

lies in front, the spine will be bent and the abdominal surface, which is behind, may be concave. If the position of the child is such that the abdomen lies in front, then accommodation to the cavity can be obtained only by some extension of the spine. If this extension is enough to bring the occipitospinal joint in front of the line along which the propelling force acts, this force will, unless opposed, produce full extension of the head. When the head enters the brim with the occiput anterior the biparietal diameter corresponds almost exactly with one or the other oblique diameter of the pelvis when there is room for it. If however the occiput is posterior the biparietal diameter must fit into a diameter of the pelvis which is posterior to, and smaller than, the oblique diameter. As a result the occiput is retarded, producing a varying degree of extension.

As to the cause of primary occipitoposterior position opinions differ, but many authors⁹ agree as to the deviations from normal of the bony pelvis. Thoms¹⁰ mentions the relative or the actual diminution of the transverse diameter of the inlet, and Caldwell and Moloy¹¹ state that this type of deformity, as exhibited in their "android" pelvis, necessarily tends to cause posterior engagement. Our experience has shown that the narrower the anterior pelvis the higher the percentage of posterior positions. Many authors recognize definite pelvic contraction as a cause of posterior posi-

than with anterior positions. On an average it lasts from two to four hours longer in primiparas and from one to two hours longer in multiparas. I believe that this delay occurs during the stage of expulsion and that in the majority of cases rotation occurs spontaneously if labor is allowed to continue long enough.

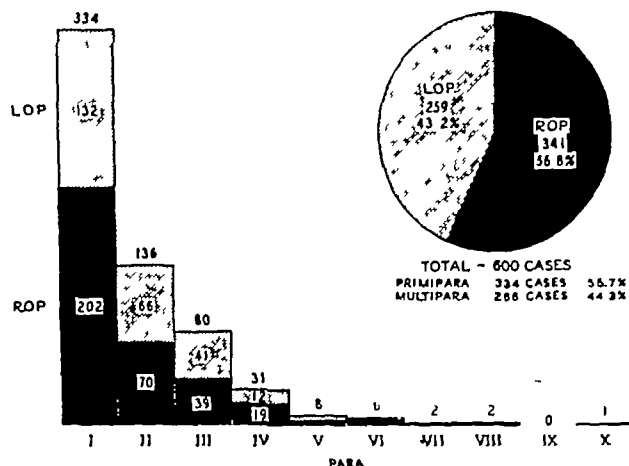


Chart 4—Correlation of the left and the right occipitoposterior position (L O P and R O P) with number of births

but we have tried to spare our patients and shorten the second stage of labor by correcting this abnormality. How this should be done depends on the individual operator. Every obstetrician who has had a large experience with this position is apt to have, rather definite ideas as to its treatment, and probably the procedure in which he is most adept is the best for his use.

In determining whether intervention may be necessary, careful palpation of the ischial spines is most important. If they are unduly prominent there will be more midplane contraction and the chances of long rotation are considerably decreased, a warning that manual rotation, use of forceps or version may be required. X-ray findings may be misleading, for the x-rays do not always show clearly the size height and thickness of the

ischial spines and the narrowing of the midplane. If the biparietal diameter is narrow, posterior position may be anticipated early in labor and operative intervention may be instituted under the most favorable circumstances. Delay in anterior rotation of the head as it descends in the pelvic cavity is definitely the result of cephalopelvic disproportion or of that pelvic asymmetry which materially diminishes the space in the fore pelvis. With the relatively greater amount of space in the posterior pelvis, the law of accommodation necessitates a posterior position of the occiput, that is descent in the line of least resistance.

In cases with no satisfactory progress it is our rule to recheck, owing to the probability of a posterior position

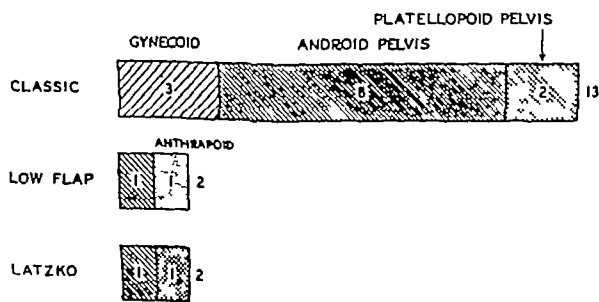


Chart 3—Correlation of delivery by cesarean section with type of pelvis. This operation was performed in 17 (28 per cent) of the 600 cases of occipitoposterior position.

tion. The etiologic importance of deflection of the head is often mentioned, but deflection in turn depends on such pelvic asymmetry as disturbs the equality of pressure on the ends of the occipitospinal lever (Cosgrove). Other important causative factors to consider are the posture of the fetus in utero and weak labor pains (poor muscle tone). The latter also applies to the abdominal muscles, particularly in lax or pendulous abdomens. The association of weak labor pains with a deficient pelvic floor is found in a large percentage of multiparas. Here the elements which normally bring about flexion and internal rotation are absent, and the occiput is likely to remain posterior.

The occipitoposterior position is not in itself a pathologic condition, but it may become so because of persistence caused by the factors mentioned. Posterior positions are likely to be a cause of difficult labor, owing to the fact that the head is usually extended when difficulty is encountered. Naturally, therefore, if there is any pelvic disproportion the labor is increasingly prolonged. Whether or not subsequently the position is corrected by anterior rotation, labor is more tedious

9 Vaux N W. *Am J Obst & Gynec.* 20: 782 (Dec.) 1930.
Hanson, Samuel. *Surg. Gynec. & Obst.* 59: 102 (July) 1934.
Cosgrove S A. *Am J Obst & Gynec.* 31: 402 (March) 1936.
10 Thoms Herbert. *Surg. Gynec. & Obst.* 58: 97 (Jan) 1933.
11 Caldwell W E and Moloy H C. *Am J Obst & Gynec.* 26: 49 (Oct) 1933.

The management of these cases calls for careful antepartum examination. This should not be limited to measurement of the pelvis and periodic examination of the urine, it must include a general examination of the patient early in her pregnancy, careful antepartum supervision and a thorough knowledge of the pathology of pregnancy. The estimation of the pelvis should take

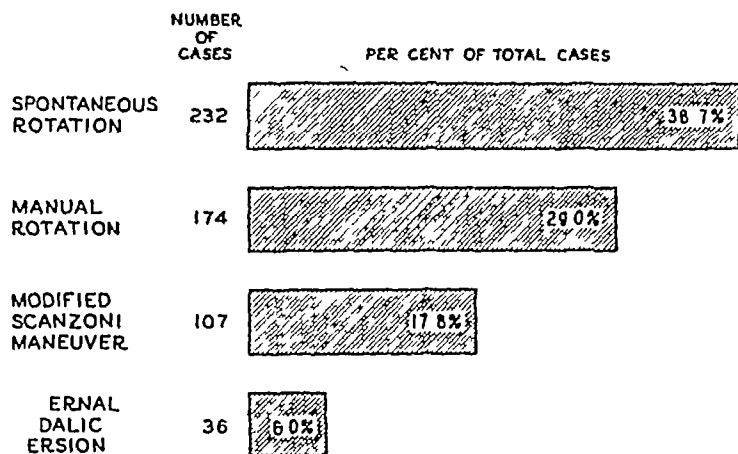


Chart 6—Methods of rotation used in cases of persistent occipitoposterior position

into account the diameter of the inlet, of the midpelvis and spines of the ischium and of the outlet, for deviation from the normal in any of these planes may lead to difficulty. In doubtful cases the x-rays should be utilized in order to make the diagnosis clear. Every pelvis should be checked and rechecked before the onset of labor. If careful examination shows a normal pelvis and a normal size baby, the posterior position need not cause too much uneasiness, since in such cases spontaneous rotation usually occurs. If the pelvis is abnormal the prospect of a normal delivery is doubtful, and the presence of a posterior position must be recognized as a factor of real dystocia. Labor will be prolonged causing some exhaustion of the mother, with danger to the fetus, and there is a great risk of extensive perineal laceration. In a primipara labor which begins by rupture of the membranes without previous pain suggests a posterior position.

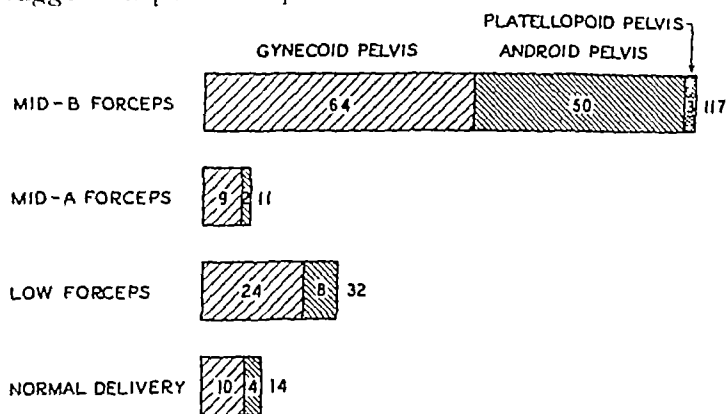


Chart 7—Correlation of method of delivery following manual rotation with type of pelvis. Manual rotation was done in 174 of the 600 cases of occipitoposterior position.

DIAGNOSIS

Diagnosis is aided by palpation of the fetal extremities anterior and to the left when the occiput is in the right posterior position, and the reverse when the occiput is in the left posterior position. The fetal heart is not always heard on the side of the given position, it may be heard on the opposite side, because the fetal thorax, being anterior, transmits the sound into the latter position. This, no doubt, is brought about by the partial extension of the head. If on vaginal exami-

nation both the large and small fontanels are felt, it indicates imperfect flexion. The small fontanel is in the right or the left posterior quadrant, and the large fontanel is easily felt in the opposite anterior quadrant. When an extensive caput succedaneum obliterates the fontanels, palpation of the posterior ear reveals the location of the occiput. The right position occurs much more frequently than the left. In vertex presentations a fairly large percentage enter the pelvis with the sagittal suture lying transversely, particularly in cases with a forward sacral promontory, therefore, in the beginning they are occiput transverse.

TREATMENT

There are no set rules to cover all cases. In my opinion it is much better for labor to be definitely established and sedation not given until dilatation of the cervix reaches 3 to 3.5 cm. If sedation is given too early, it tends to slow and prolong labor and additional sedation is required, leading in some cases to increased morbidity and birth injuries. While the cervix is dilating a Beck binder is applied. The bag of waters is preserved as long as possible, both for its dilating factor and to facilitate version if this is indicated. If dilatation is unduly slow, the anterior end of the fetal head may be forced upward, thereby increasing flexion. No inter-

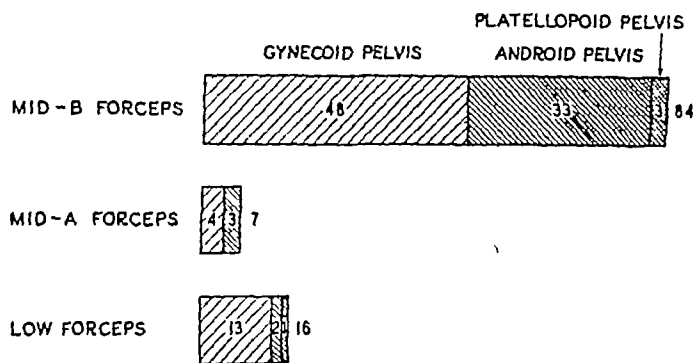


Chart 8—Correlation of method of delivery following the modified Scanzoni maneuver with type of pelvis. This maneuver was used in 107 of the 600 cases of occipitoposterior position.

vention is made until the cervix is completely dilated and effaced, then, if the head remains unengaged (whenever the longest diameter of the head has not passed through the pelvic inlet), podalic version is performed. This is more easily done before the membranes have ruptured, therefore, when all conditions have been fulfilled, it is better to deliver early. If the membranes have already ruptured and the head is still high when the os is fully dilated, version should be done as promptly as possible before the amniotic fluid has drained away and while there is still a sufficient amount of liquor remaining in the sac. When an engaged head is at the spines, from one and a half to two hours of labor is allowed for rotation, if it is below the spines, about an hour is allowed. Occasionally this rule is broken to permit better molding in the case of a fairly large head provided mother and child are in good condition. Manual rotation properly performed is simple and causes less trauma than other methods. I have used Schumann's¹² modification of the Pomeroy technic as follows. The hand whose palmar surface will slip over the occiput is introduced into the vagina, the first and second fingers slip past the head and seek the anterior axilla, the head lying loosely in the palm of the hand. With the other hand making abdominal pressure, the shoulder of the child

is firmly pushed around the anterior aspect of the pelvis until the body has been rotated almost 180 degrees. The occiput becomes dislodged from under the promontory of the sacrum and turns with the body into an anterior position. When this is accomplished the hand is not withdrawn until after one blade of the forceps has been applied to the head, acting as a wedge to

Following manual rotation, forceps were used as follows: low forceps, 32, mid-A forceps, 11, mid-B forceps, 117, total, 160.

Following the modified Scanzoni maneuver, forceps were used as follows: low forceps, 16, mid-A forceps, 7, mid-B forceps, 84, total, 107.

Midforceps were used in 219 cases (27.3 per cent).

Internal podalic version for high or unengaged heads was performed in 36 cases (0.6 per cent). In 209 cases (34.8 per cent) the membranes ruptured before the onset of labor.

In the entire series of 600 babies 3 were stillborn and 3 died during the first fourteen days, a gross fetal and neonatal mortality of 1 per cent. The 3 stillborn ones were all in the mid-B forceps class. The first was a large baby with a fairly large head in an android pelvis, rotation could not be done, and intracranial injury resulted from occipitoposterior delivery. The second was delivered after prolonged labor (forty-two and one-half hours) and a modified Scanzoni maneuver. The third was also delivered by a modified Scanzoni maneuver, and there were two coils of cord around the child's neck and one under the axilla.

One of the 3 babies who died in the fourteen days after delivery lived only ten minutes (prolonged labor, cerebral injury), the second died after three hours of a congenital anomaly of the heart, and the third died of gastroenteritis on the fourteenth day.

There were no maternal deaths, and the morbidity accompanying the complication was as follows: infection of perineum, 1 case, mastitis, 2 cases, pyelitis, 8 cases, sapremia, 15 cases, total, 26 cases (4.3 per cent).

SUMMARY

1 Early recognition of the occipitoposterior position is most important, as this complication always complicates labor, sometimes to a serious degree.

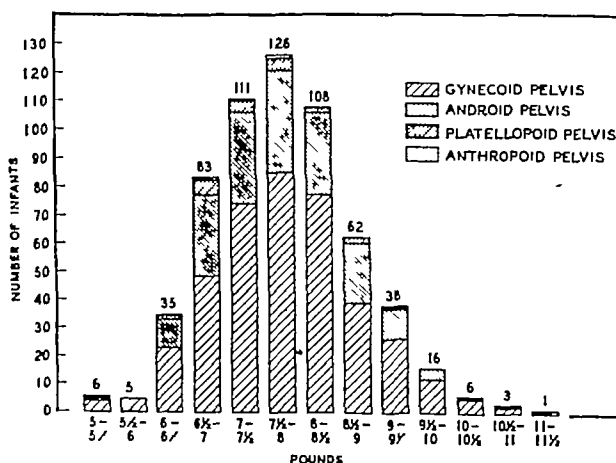


Chart 11—Correlation of weight of infant at birth with type of pelvis in cases of occipitoposterior position.

2 The first stage of labor is sometimes much prolonged and should be so managed as to minimize the suffering and exhaustion of the mother. The second stage may often be shortened with great advantage to the mother and the child.

3 The female pelvis is subject to many variations in size and shape, therefore each labor is different, and operative procedures must be individualized.

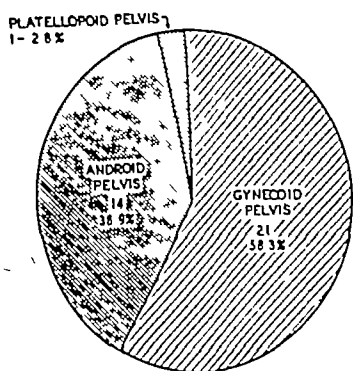


Chart 9—Correlation of delivery by internal podalic version and breech extraction with type of pelvis. This operation was necessary in 36 of the 600 cases of occipitoposterior position.

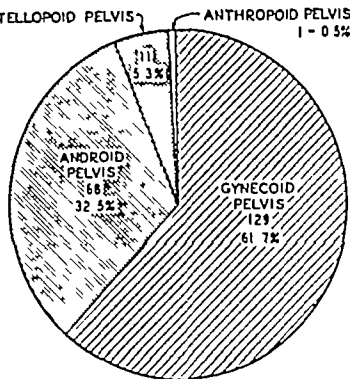


Chart 10—Correlation of premature rupture of membranes with type of pelvis. Premature rupture occurred in 209 (34.8 per cent) of the 600 cases of occipitoposterior position.

prevent the occiput from rotating again to the posterior position. The second blade is then applied, and delivery follows.

In forceps rotation I prefer the modified Scanzoni method as described and advocated by Bill.¹³ I try to rotate the head in the station in which it lies, just as would be done with the hand, although with the forceps there is apparently less displacement of the head. If this is properly done there should be no laceration or injury of the child. This procedure has been followed in several hundred cases and in only 2 instances (both the babies were large with large heads) was it impossible to rotate the head by forceps. Only 9 cases in our series were delivered by Kielland's forceps since we have not found this instrument successful when used as described by Kielland. On one or two occasions Kielland's forceps has been applied after the head had been rotated manually to the anterior position.

CESAREAN SECTION

Cesarean section was resorted to in 17 cases in our series, but in no case did the posterior position furnish the sole indication for this procedure. Early recognition of the positive indications for cesarean section and prompt operation would probably spare the mother much risk and additional pain and save the life of the baby in many instances. This is especially true with regard to the borderline pelvis with nonengaging head.

In the 600 cases of occipitoposterior position which I have reported from St. Ann's Maternity Hospital the position was right occipitoposterior in 341 (56.9 per cent) and left occipitoposterior in 259 (43.2 per cent). There were 334 primiparas and 266 multiparas.

Anterior rotation occurred spontaneously in 232 cases (35.9 per cent). In 100 of these cases the spontaneous rotation was followed by a normal delivery. This leaves 500 cases in which some form of operative intervention was required. The method of rotation in this group was as follows: manual rotation, 174 cases (29 per cent), modified Scanzoni maneuver, 107 cases (17.8 per cent), version, 36 cases (0.6 per cent).

4 In the narrow fore pelvis the true conjugate is of average length, also with a forward promontory of the sacrum there are more occiput transverse presentations

5 In a series of 600 consecutive cases of occipito-posterior position at St Ann's Maternity Hospital, New York the gross fetal and neonatal mortality was 1 per cent The fetal mortality, therefore, was no greater than in occipitoanterior positions

6 Parity and age apparently are not factors in this complication

7 Large size of the baby per se is not the cause of posterior positions it is a factor only when associated with pelvic deviations from the normal

8 The occipitoposterior position need no longer be dreaded, as nearly all cases can be dealt with successfully even if anterior rotation should fail to occur spontaneously

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PREVENTION OF EXPERIMENTAL RABIES

TREATMENT OF WOUNDS CONTAMINATED BY RABIES
VIRUS WITH FUMING NITRIC ACID, SOAP
SOLUTION, SULFANILAMIDE OR
TINCTURE OF IODINE

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AND
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Prevention of rabies by local treatment of bites inflicted by rabid animals has occupied the attention of practitioners of the healing art from at least as early as the first century A. D. Celsus¹ at that time and Galen in the next century advised cauterization with a hot iron The latter also suggested that the wound be incised and drawing medicine applied in order to maintain a running ulcer for at least forty days

Between that time and the eighteenth century, many other methods of treatment were employed Many of these were based on mysticism or empiricism, often in conjunction with the actual cautery Soon after the eighteenth century began, cauterizing agents other than the hot iron came into use Silver nitrate and burning with gunpowder were employed The first to advocate the use of nitric acid seems to have been Dr Samuel Danforth²

Little information is available in the literature in regard to the efficacy of these methods of treatment Most of the results have been presented in the form of case reports Since physicians now know that about 65 per cent of those bitten by rabid animals escape infection,³ this kind of proof means little when only 1 or 2 cases are cited

Scant proof has been offered to show the value of the various types of local treatment that have been

applied to wounds contaminated with rabies virus experimentally Babes⁵ studied the value of the thermocautery in dogs and rabbits He inflicted wounds on the faces of 10 dogs and 15 rabbits and then contaminated the wounds with fixed rabies virus The wounds of 8 dogs and 13 rabbits were deeply cauterized at different intervals, and the remaining 2 dogs and 2 rabbits served as controls Three of the 8 treated dogs and 4 of the 13 treated rabbits did not develop rabies while all of the controls died

In the experiment in which he used rabbits, all of the 7 animals whose wounds were cauterized more than twenty-five minutes (twenty-five to sixty minutes) after contamination developed rabies In his experiment with dogs all but 1 of the 5 animals whose wounds were treated after twenty-five minutes developed rabies The dog that escaped infection was 1 of 2 treated after an interval of twenty-four hours

In 1899 Follen Cabot⁶ published his studies on the prevention of experimental rabies by local treatment of wounds with fuming nitric acid Since his publication is widely quoted as a basis for the use of fuming nitric acid for the treatment of wounds inflicted by rabid animals on human beings, the technic that he followed is stated in full

A portion of medulla taken from a rabbit dead from laboratory rabies was beaten into an emulsion composed of 1 part of medulla to 5 parts of sterile water Of this emulsion 1 cc was injected with a hypodermic needle into the outer and upper part of the thigh of a guinea pig The hair was closely cut, and the point of the needle introduced one fourth of an inch, at right angles, into the region of the sciatic nerve This injected virus was left undisturbed for twenty-four hours, at the end of which time an incision half an inch long was made over the seat of puncture, exposing the nerve The tissue in the wound surrounding the point of puncture was carefully swabbed out and the cautery applied, the animal meantime being anesthetized with chloroform

For each of his experiments Cabot divided his animals into four groups Group 1 was treated with fuming nitric acid group 2 with the thermocautery and group 3 with silver nitrate In group 4 the wounds were swabbed out with dry absorbent cotton and left open Each group had its own set of control animals Of the guinea pigs that were treated with fuming nitric acid 91 per cent did not develop rabies, against 15 per cent of the controls The results with the actual cautery were equally striking, as 70 per cent of the treated animals and only 11 per cent of the controls escaped the infection In the experiments with silver nitrate 55 per cent of the treated animals did not become infected, compared with 16 per cent of the control animals Thirty-one per cent of the guinea pigs whose wounds were only swabbed out with cotton and 16 per cent of their controls did not develop rabies

Poor⁷ reported the results of a single experiment in which he used fuming nitric acid to treat wounds that had been contaminated with rabies virus He made an incision on the back of the neck of each guinea pig and cut the subcutaneous tissues on either side of the wound in several places with scissors The wounds were

From the Illinois Department of Public Health, Division of Laboratories.

¹ Underwood, J. W. The Eight Books on Medicine of Aulus Cornelius Celsus, 1830, vol. 3, p. 107

² Hamilton, Robert. Remarks on the Means of Obviating the Fatal Effects of the Bite of a Mad Dog or Other Rabid Animals, London, Shaw and Jackson Company, 1780, p. 30

³ Thatcher, James. Observations on Hydrophobia, Joseph Avery Company, 1812, p. 239

⁴ Cornwall, J. W. Statistics of Antirabic Inoculations in India Brit. M. J. 2, 298, 1923

⁵ Babes, V. Etudes sur la rage Ann. Inst. Pasteur 8:434-445 1894

⁶ Cabot Follen. The Cauterization of Wounds Infected with the Virus of Rabies After an Interval of Twenty-Four Hours, Medical News 74:329-331 1899

⁷ Poor, I. W. The Late Cauterization by Means of Nitric Acid of Wounds Infected with Rabies Virus, Collected Studies from the Research Laboratory, No. 6 Department of Health New York, 1911 p. 25

contaminated with street virus and then their edges were brought together with adhesive plaster. Twenty-two hours later they were opened and fuming nitric acid was applied. Twenty guinea pigs were used in this experiment and of this number 12 were treated and 8 served as controls. Five of the treated animals did not develop rabies, whereas all the controls succumbed.

It is difficult to evaluate the results of these experiments. With the exception of Cabot's⁸ experiments the studies were conducted with comparatively small numbers of animals. The experimental procedures used by these investigators were varied and in some instances were quite unlike the natural mode of infection and application of therapy. Cabot's methods especially may be criticized in the latter regard. The application of cauterizing agents to the region of the exposed sciatic nerve might have damaged the nerve sufficiently to prevent progression of the virus along its fibers. Possibly this explains, at least in part, why Cabot obtained such good results. Obviously, however, such a method of treatment, which may involve the destruction of main nerve trunks, could not be employed in the prevention of human rabies.

Rosenau⁹ wrote in his textbook

Experiments under my supervision (unpublished) indicate that practically all guinea pigs may be saved by prompt application of nitric acid, that its effectiveness decreases with time but that it is still partially protective up to forty-eight hours. No other substance gives equally good results. Strong germicides, such as carbolic acid, are not reliable, nitrate of silver is valueless, formalin and the actual cautery are not effective. Nitric acid, on account of its diffusibility and penetration is almost specific for rabies.

The experiments referred to by Rosenau have not been published, consequently it is not possible to analyze his results. It would be of interest, however, to know how many substances other than those he mentioned were tried by him and how he determined the diffusibility and penetration of nitric acid applied to wounds of this character. It should be pointed out that Rosenau's and Cabot's observations conflict in respect to the use of silver nitrate and the actual cautery but that they are in complete agreement in regard to the effects of fuming nitric acid.

The clinical and the experimental evidence cited in the preceding paragraphs do not, in our opinion, establish the value of fuming nitric acid in the prevention of rabies. Yet it appears that on the basis of these reports most public health and medical authorities at the present time recommend that bites inflicted by rabid animals be treated with fuming nitric acid. Cauterization with fuming nitric acid produces many undesirable reactions. Its application to wounds is painful, and bacterial infections may result because of its destructive action on tissues. Usually healing is slow after its use, and severe scarring may follow. If the acid is applied to deep wounds, contractures may result or periosteal and bony tissues may be damaged. Consequently, physicians are reluctant to apply fuming nitric acid to bites of rabid animals, especially when the bites are deep and badly lacerated or when they are inflicted on the face. Gowen's⁹ survey of the actual practice in Illinois bears this out. He showed that fuming nitric

acid was used to treat only about 28 per cent of the cases in which wounds inflicted by presumably rabid animals were given any form of local treatment.

In view of these facts we decided to investigate more thoroughly the effect of fuming nitric acid in the prevention of rabies by applying it to wounds that were contaminated experimentally with rabies virus. In addition we compared the value of soap solution and tincture of iodine with that of fuming nitric acid. We also studied the effect of packing the wounds with sulfanilamide after they had been treated with soap solution.

METHODS AND MATERIALS

Virus—In these studies it was desired to infect either guinea pigs or mice with rabies virus in such a manner as to simulate as closely as possible the mode of the infection resulting from a bite of a rabid animal. Since natural rabies is caused by an infection with rabies street virus and since most of the animal bites are deep enough to reach subcutaneous and muscle tissues, attempts were made to obtain a strain of street virus that would be infectious for these animals on inoculation into these tissues. Twenty-eight strains of street viruses were isolated from brains of dogs that had died of the natural disease. The isolations were made by preparing a 10 per cent suspension of the brain of each dog and by injecting 0.5 and 0.15 cc intramuscularly and 0.15 and 0.03 cc intracerebrally into guinea pigs and mice respectively. Usually 2 guinea pigs and 4 mice were given an injection by each route and with each specimen. The intramuscular inoculation was made into the gastrocnemius muscle.

Only 5 of these 28 strains produced rabies by intramuscular inoculation. Each of these 5 strains infected about 50 per cent of the guinea pigs and mice in the first passage. By the intracerebral route of injection all of the strains were infectious for both guinea pigs and mice, producing about 96 per cent mortality. A diagnosis of rabies was made in the test animals by detecting Negri bodies in smear preparations of the brains of those that died.

Only those viruses that were infectious by intramuscular injection were employed in the experiments. Each virus was passed once either in guinea pigs or in mice by the intramuscular route before it was used to infect the experimental animals. In attempts to infect a larger number of animals under the experimental conditions it was found that these strains did not produce rabies consistently. The rates of infectivity varied from 5 to 50 per cent in the control mice and from 1 to 80 per cent in the control guinea pigs. Their virulence could not be enhanced or maintained by serial intramuscular passages either in guinea pigs or in mice. Four strains lost their infectivity by the intramuscular route after two passages and one after four. Consequently these studies could not be successfully conducted with any of these strains of viruses. They were employed in a few of the preliminary studies, but a fixed rabies virus was used in the main experiments.

After testing the virulence of several strains of fixed rabies viruses it was found that one strain, S-1, consistently infected guinea pigs and mice by the intramuscular route of inoculation. S-1 virus was fixed for rabbits, and it was maintained in them by serial intracerebral passages. Before it was used to inoculate the animals in the experiments it was passed once through guinea pigs by intramuscular injection except in experiments 16, 17 and 18 in which rabbit brain virus was employed. Its virulence after the first passage in guinea pigs was such that 0.5 and 0.1 cc of a 1 per cent suspension of an infected guinea pig brain produced rabies in 100 per cent of the guinea pigs and mice respectively. The virus was inoculated in the muscle tissues of the left hindleg and the animals died within ten days after the injection. The minimum lethal dose of S-1 virus for mice by the intracerebral method of inoculation was about 0.03 cc. of a 10⁻⁶ dilution.

In the experiments each guinea pig was given an injection of 0.2 cc of either a 10 or a 20 per cent suspension of the

⁸ Rosenau, M. J. Preventive Medicine and Hygiene, ed. 6, New York: D. Appleton Century Company, 1935, p. 353.
⁹ Gowen, G. H. Rabies in Illinois, 1936. Illinois M. J. 72: 174, (Aug.) 1937.

virus The virus suspensions were prepared from approximately equal portions of the brains of at least 2 guinea pigs which had died after intramuscular injection of S-1 virus. Only brains that were free from bacterial contamination and had not been stored longer than five days at about -5°C were used. The suspensions of virus were made in hormone broth.

Inclusion bodies were found in the brains of guinea pigs and mice that died from infection with S-1 virus. Some of these bodies were spherical and others oval. They were about the size of Negri bodies with the exception that about 25 per cent of the spherical type were much smaller. When the bodies were stained by Seller's method their peripheries were dark blue, the bodies themselves were pink, and the typical dark blue granules seen in Negri bodies were absent. The presence of these inclusion bodies was not considered diagnostic for rabies.

Animals—Guinea pigs weighing from 300 to 450 Gm were employed in the main experiments. Albino Swiss mice, each weighing about 20 Gm, were used in the preliminary studies and in the virus neutralization tests. The sexes were about equally represented in both the guinea pigs and the mice. The animals were kept in individual cages to prevent fighting, cannibalism and cross infection. In the experiments the animals were kept under observation for thirty-five days after inoculation. Thereafter the surviving animals were released and about 90 per cent of the female and about 15 per cent of the male guinea pigs were used for breeding purposes. Under such an arrangement more than 65 per cent of the released guinea pigs were observed for about one year. The longest incubation period that was noted in the guinea pigs inoculated with S-1 rabies virus was fifteen days, the average being about seven days.

Methods of Inflicting the Wounds and Inoculating Them with Rabies Virus—The procedures of inoculation were designed to approximate as closely as possible the mode of the infection caused by a bite of a rabid animal. Three such methods were employed. The site selected for the wound in each case was the muscular tissue on the back of the neck, slightly anterior to the shoulder blades. The hair was always clipped from the site of inoculation, and aseptic technic was observed in all of the methods.

Method 1 A rat tooth forceps was dipped into a 20 per cent virus suspension and then clamped on the neck muscles of the animal. By this procedure the wound was contaminated at the same time that it was inflicted. The amount of the virus suspension transferred by the forceps in a single dip could not be accurately determined. It was estimated, however, that about 0.05 cc of the suspension was planted in the wound. The wound inflicted in this manner contained three punctures, and in the course of treatment it was necessary to treat each puncture separately. For inoculation of guinea pigs this procedure was unsatisfactory because the skin of these animals, owing to its thickness, could be punctured by the teeth of the forceps only with difficulty. Although method 1 probably simulates most closely the natural mode of infection, it could not be used in experiments with guinea pigs.

Method 2 This is a modification of the technic employed by Cabot⁶ and Poor.⁷ Only guinea pigs were inoculated by this method. Each animal received 0.2 cc of a virus suspension in the muscle tissues in the back of the neck, slightly anterior to the shoulder blades. A 22 gage hypodermic needle 3 mm long was used. The needle was inserted 3 mm deep at right angles to the surface of the body. Thirty minutes after the inoculation an incision about 12 mm long and about 9 mm deep was made exposing the locus of the virus injected and the needle track. The open wound was then treated.

Method 3 In this procedure an incision was made with a scalpel in the muscles on the back of the neck slightly anterior to the shoulder blades in each guinea pig. The incision was about 12 mm long and about 6 mm deep. Immediately after the wound was inflicted, approximately 0.2 cc of a virus suspension was deposited in it from a syringe with an 18 gage blunt needle. Following the inoculation the wounds were slightly irritated with the tip of the needle.

Treatment of Animals Inoculated with Rabies Virus—Fuming nitric acid, 20 per cent aqueous solution of soft soap,¹⁰ tincture of iodine and powdered sulfanilamide were used to treat the wounds of the animals after they were inoculated with rabies virus. The application of the nitric acid was made by means of a glass rod drawn out to about 15 mm in diameter and 40 mm in length. This glass applicator was dipped in fuming nitric acid to the depth of about 10 mm and then applied to the wound. The clotted blood was removed from the wounds before the acid was applied. The irrigation with the soap solution was carried out with either 20 or 50 cc syringes fitted with 16 gage hypodermic needles 65 mm long. The wounds were irrigated under the pressure produced by the application of the full force of the hand to the plunger of the syringe. A small hole was drilled in the bottom of a 250 cc beaker, through which the needle was inserted into the beaker. By holding the beaker in an inverted position over the wound of the animal it was possible to carry out the irrigation without allowing the spray to endanger the operator. The volume of the soap solution that was used is stated in reference to each experiment. The iodine was applied with a cotton swab on a wooden applicator. The methods of treatment with sulfanilamide are described in detail in the protocols of experiments 17 and 18.

The application of the fuming nitric acid to the wound caused severe burns and extensive scarring in most of the animals. The wounds healed slowly, requiring about twenty-eight days for complete healing. Consequently it was not possible to apply any more of the acid than could be picked up by one dipping of the applicator without causing death. The treatment with the soap solution, the tincture of iodine or the sulfanilamide did not cause any apparent toxic effects. The wounds healed much sooner than those treated with the fuming nitric acid and scarring was minimal. In each method of treatment the wounds were allowed to heal without being bandaged.

Methods of Diagnosing Rabies—Since the clinical symptoms shown by guinea pigs and mice that develop experimental rabies cannot be considered definitely pathognomonic, laboratory methods were employed to establish the diagnosis of rabies in the animals that died. Two such methods were used. In those experiments in which the animals were inoculated with street rabies virus a diagnosis of rabies was established by the detection of Negri bodies in the brain tissue. The brain smears were prepared and stained for Negri bodies by Seller's method.¹¹ In most of the experiments in which the animals were inoculated with S-1 fixed rabies virus the diagnosis of rabies was confirmed by the neutralization test.¹² This test, which was made only on representative animals, was conducted as follows. One part of a 1:100 dilution of the virus infected guinea pig brain was combined with two parts of antirabic serum. The mixture was incubated at 37.5°C for one hour. During the incubation period it was thoroughly shaken every fifteen minutes. Then 0.03 cc of the mixture was injected into each of at least 3 mice by the subdural route. The test was controlled by using normal rabbit serum in place of the antirabic serum. In addition, the brains and heart bloods of representative animals that died in each experiment were studied culturally for bacterial infection. When contamination was encountered, the pathogenicity of the organism was determined by animal inoculation.

EXPERIMENTS

The preliminary experiments were conducted with the five strains of rabies street viruses which were isolated in our laboratory and which were found to be infectious for guinea pigs and mice by intramuscular inoculation. Four hundred and seventy-five mice and 75 guinea pigs were used. The mice were inoculated by

¹⁰ The soap used in these experiments was purchased from the Industrial Soap Company, St. Louis.

¹¹ Sellers, T. F. A New Method for Staining Negri Bodies of Rabies, *Am. J. Pub. Health* 17: 1080-1081 (Oct.) 1927.

¹² The antirabic serum used in experiments 1 to 5 was supplied by Dr. Harald N. Johnson of the Alabama State Health Department. The antirabic serum used in the remaining experiments was prepared in our laboratory.

method 1 and the guinea pigs by methods 1, 2 and 3. From 5 to 50 per cent of the control mice developed rabies. In the control guinea pigs that were inoculated by method 1 the mortality was about 1 per cent and in those inoculated by the other two methods the mortality ranged from 15 to 80 per cent. In addition, a

TABLE 1—Results in Guinea Pigs Inoculated with S-1 Rabies Virus and Treated About Thirty Minutes Later

Experiment	Guinea Pigs Treated by Method 3 with			Untreated Controls
	Fuming Nitric Acid	20% Soap Solution	Tincture of Iodine	
1	7/1	5/5		2/
2	10/10	0/10		7/10
3	0/10	10/10	7/10	7/10
4	0/10	10/10	10/10	7/10
5	10/10	0/10	10/10	5/10
6	7/10	0/10		5/10
7	15/20	18/20	21/20	8/20
Number survivors/number used	63/70	67/70	51/60	29/55
Per cent not developing rabies	89.9	93.8	90.0	50.9

The numerator is the number of guinea pigs that did not develop rabies; the denominator the number of guinea pigs used.

large number of the treated mice died in which a diagnosis of rabies could not be established. These deaths were attributed to the small size of the animals which involved exposure of a relatively large percentage of their body surfaces to the burning and toxic effects of fuming nitric acid, soap solution or tincture of iodine. In view of these results it was apparent that these studies could not be successfully conducted with either mice or our strains of street viruses. Consequently the work with mice and the street viruses was discontinued, and the subsequent experiments were conducted with the S-1 fixed rabies virus and guinea pigs.

EXPERIMENTS 1 to 6—The guinea pigs in these experiments were treated about thirty minutes after they were inoculated with rabies virus. Two hundred and twenty-five guinea pigs were used and they were distributed among the experiments as shown in table 1.

In each experiment the guinea pigs were inoculated with S-1 rabies virus by method 3. An incision was made in the muscles on the back of the neck slightly anterior to the shoulder blades in each animal and then 0.2 cc of a 10 per cent suspension of the virus was deposited in the wound. If hemorrhage had occurred, the clots of blood were removed before treatment was begun. The fuming nitric acid was applied to the wounds by carefully probing them with the glass applicator after dipping it in the acid. A cotton swab was used for the application of the tincture of iodine. The wound of each animal treated with the soap solution in experiments 1 to 4 was irrigated with about 60 cc of the soap solution while in experiments 5 and 6 about 120 cc was used. The control guinea pigs were inoculated by the same procedure but their wounds were not disturbed after the inoculation with virus.

A diagnosis of rabies was established in representative guinea pigs that died in each experiment by means of the neutralization test with antirabic serum. The heart bloods and brains of representative animals in each experiment were studied culturally and pathogenic bacteria could not be found.

The results of experiments 1 to 6 show (table 1) that 89 per cent of the guinea pigs that were treated with fuming nitric acid, 93 per cent of those treated with soap solution and 90 per cent of those treated with tincture of iodine, compared with 37 per cent of the control animals, did not develop rabies. The results of treat-

ment with tincture of iodine compared favorably with those obtained with fuming nitric acid and with soap solution. They are, however, less conclusive because a smaller number of animals were treated with it. Since the application of tincture of iodine to open wounds causes discomfort and in some instances chemical burns, it was decided to limit further studies with it.

As shown in these experiments (table 1) the application of fuming nitric acid, 20 per cent solution of soft soap or tincture of iodine to wounds about thirty minutes after they were inoculated with rabies virus was of decided value in preventing rabies. It is not always possible, however, to treat human beings or animals within thirty minutes after they have been bitten by a rabid animal. For this reason it was desired to determine what effect these agents would have when applied two or six hours after the animals were inoculated with rabies virus.

EXPERIMENTS 8 to 12—In these experiments the guinea pigs were inoculated with S-1 rabies virus by method 3 and they were treated about two hours after inoculation.

Two hundred and eighty guinea pigs were employed, and they were distributed among the experiments as shown in table 2. Each animal received 0.2 cc of a 20 per cent suspension of the virus. The control animals were inoculated with the virus by the same procedure but they did not receive treatment.

The experiments were conducted in the same manner as experiments 1 to 7 except that approximately 80 cc of the soap solution was used to irrigate the wound of each animal that was treated with the soap in experiments 8 and 9 and about 200 cc in experiments 10, 11 and 12.

The rabies virus used in these experiments was identified by the neutralization test with antirabic serum. The test was performed only on representative animals from each experiment. In addition cultural studies were made of the brains and heart bloods of representative guinea pigs from each experiment and no bacteria could be found.

As shown in table 2 in experiments 8 to 12, 81 per cent of the guinea pigs that were treated with fuming nitric acid, 85 per cent of those treated with the soap solution, 60 per cent of those treated with tincture of iodine and 26 per cent of the control animals showed

TABLE 2—Results in Guinea Pigs Inoculated with S-1 Rabies Virus and Treated About Two Hours Later

Experiment	Guinea Pigs Treated by Method 3 with			Untreated Controls
	Fuming Nitric Acid	20% Soap Solution	Tincture of Iodine	
8	8/10*	9/10	6/10	4/10
9	7/10	6/10	6/10	1/10
10	13/20	18/20		0/20
11	20/20	16/20		7/20
12	17/20	10/20		10/20
Number survivors/number used	65/80	68/80	12/20	22/80
Per cent not developing rabies	81.3	85.0	60.0	27.5

* * The numerator is the number of guinea pigs that did not develop rabies; the denominator the number of guinea pigs used.

no evidence of infection with rabies virus. The results of these experiments show that the application of fuming nitric acid, soap solution or tincture of iodine to the wounds of guinea pigs two hours after they were inoculated with fixed rabies virus was of definite benefit in preventing infection. The treatment with tincture of iodine was less effective than that with either of the other two substances. As in the previous experiments

however, a much smaller number of animals were treated with tincture of iodine. Consequently a fair comparison of the results cannot be made. These results also show that treatment with either fuming nitric acid or soap solution was just about as effective when it was instituted in two hours as when in thirty minutes. The slightly lower percentage of survivors among the animals treated two hours after inoculation is probably of no significance since the percentage of survivors among the controls is also smaller in these experiments.

EXPERIMENTS 13, 14 and 15—The guinea pigs in these experiments were treated six hours after they were inoculated with rabies virus. Sixty guinea pigs were used in each experiment, and they were divided into three groups of 20 each. The wound of each animal was inoculated with 0.2 cc of a 20 per cent suspension of S-1 virus by method 3. The fuming nitric acid was applied to the wounds in the same manner as in the previous groups of experiments. The wound of each animal treated with soap was irrigated with about 200 cc of the solution.

In these experiments (table 3) 63 per cent of the guinea pigs treated with fuming nitric acid, 67 per cent of those treated with the soap solution and 35 per cent of the controls did not develop rabies. The diagnosis of rabies in representa-

TABLE 3—Results in Guinea Pigs Inoculated with S-1 Rabies Virus and Treated About Six Hours Later

Experiment	Guinea Pigs Treated by Method 3 with		Untreated Controls
	Fuming Nitric Acid	20% Soap Solution	
13	14/20*	17/20	10/20
14	14/20	14/20	9/20
15	10/20	9/20	11/20
Number survivors/number used	38/60	40/60	41/60
Per cent not developing rabies	63.3	66.6	35.0

* The numerator is the number of guinea pigs that did not develop rabies, the denominator the number of guinea pigs used.

tive animals from experiment 14 was established by the neutralization test. The brains and heart bloods of representative guinea pigs from each experiment were studied culturally and bacterial contamination could not be detected.

The results of these experiments show that either fuming nitric acid or soap solution was of pronounced benefit in preventing rabies even when applied in six hours, although considerably less effective than when it was applied in two hours or thirty minutes.

As in the two previous groups of experiments, here again the results of treatment with the soap solution were apparently slightly better than those obtained with fuming nitric acid, although the differences are not statistically significant.

EXPERIMENT 16—In this experiment it was desired to repeat as closely as possible the technique employed by Cabot⁶ and Poor.⁷ The guinea pigs were inoculated as described in method 2, 0.2 cc of a 20 per cent suspension of S-1 virus being injected into the muscle tissues on the back of the neck, slightly anterior to the shoulder blades of each animal. About thirty minutes after the injection an incision was made as previously described, and the animals were treated immediately thereafter. The control guinea pigs were inoculated by the same procedure but they were not given any treatment after the incision was made.

Sixty guinea pigs were employed in this experiment. Twenty were treated with fuming nitric acid, 20 with soap solution and 20 were used as controls to determine the virulence of the virus. The fuming nitric acid was applied as in the previous

experiments, and about 100 cc of the soap solution was used to irrigate the wound of each guinea pig.

Fifty per cent of the guinea pigs that were treated with fuming nitric acid, 60 per cent of those that were treated with soap solution and 15 per cent of the control animals did not develop rabies. Brain tissues and heart bloods of representative guinea pigs were cultured and no bacteria could be detected.

The results of experiment 16 are in agreement with those reported by Poor.⁷ Also they are in general agreement with the results reported by Cabot,⁶ although in his studies a much larger percentage of the guinea pigs that were treated with fuming nitric acid escaped infection. Possibly this difference may be attributed to the variation in the technique used in the inoculations and treatment.

EXPERIMENT 17—Soap solution and sulfanilamide¹² were employed for treatment in this experiment. Each guinea pig was inoculated with 0.2 cc of a 20 per cent suspension of S-1 rabies virus by method 3. About thirty minutes later the wound of each animal was irrigated with 100 cc of soap solution, then sponged dry and packed with 0.5 Gm of powdered sulfanilamide. In each case immediately following treatment the wound was clipped together with metal clips. The control guinea pigs were inoculated by the same procedure but their wounds were clipped together without treatment.

Sixty guinea pigs were used in this study. Treatment was given to 30, and the other 30 served to control the virulence of the virus. Ninety per cent of the treated animals, compared with 20 per cent of the controls, did not develop rabies. Cultural studies were made of the heart bloods and brains of representative guinea pigs that died and bacterial contamination was not observed.

The results of this experiment are in agreement with those of our first group of experiments, in which treatment was carried out only with soap solution showing that the sulfanilamide apparently did not influence the results one way or another.

EXPERIMENT 18—Each guinea pig in this experiment was inoculated with 0.2 cc of a 15 per cent suspension of S-1 virus by method 3. The treatment was carried out exactly as in experiment 17 except that the wounds were not irrigated with the soap solution. Before the sulfanilamide was applied, each wound was carefully and thoroughly swabbed out with cotton swabs that had been soaked in soap solution. At least four swabs were used in treating each wound.

Twenty-eight guinea pigs were used in this experiment. Of this number 14 received treatment and 14 were used as controls. Seventy-nine per cent of the animals that received treatment and 36 per cent of the controls did not show evidence of rabies. Cultural studies of the heart bloods and brains of the animals that died did not reveal any bacterial contamination.

These results show that the type of treatment employed here was considerably less effective than the type used in experiment 17. Although a comparatively small number of animals were used in this study, the results indicate that irrigation of the wounds with soap solution is much more effective in preventing rabies than cleansing the wound with cotton swabs that had been soaked in the soap solution. Here again the results indicate that the application of sulfanilamide to the wounds did not help to prevent rabies.

COMMENT

In these studies it was not possible to duplicate in every respect the natural mode of infection with rabies virus as represented in bites of rabid animals. The natural disease resulting from a bite of a rabid animal is caused by the rabies virus that is present in the saliva. It was not possible for us to employ a saliva

12 The sulfanilamide was supplied by E. R. Squibb & Sons, New York.

virus, however, because of the many difficulties involved in its procurement. Neither were we successful in our efforts to isolate from brain tissues of dogs that died of natural rabies a virus which would infect either guinea pigs or mice with any degree of consistency by intramuscular inoculation. For this reason our experiments were conducted with a fixed rabies virus which was found to cause the disease consistently by intramuscular inoculation.

A good deal of confusion exists in the literature regarding the infectivity of street and fixed rabies viruses by intramuscular inoculation. Investigators seem to be in agreement that a fixed virus is less infectious by this route. Marie¹⁴, Pasteur and his co-workers¹⁵ and Genevray and Dodero¹⁶ have shown, however, that certain strains of fixed viruses do produce rabies in animals when inoculated intramuscularly. Little information is available on the infectivity of fixed viruses in man. Athias and Franca¹⁷, Franca¹⁸, Bareggi¹⁷ and Remlinger¹⁹ cited cases in which death followed antirabic treatment with vaccine that apparently contained living virus. On the other hand, Remlinger¹⁹ and Wissokowicz²⁰ pointed out that people have been inoculated subcutaneously and intravenously with fixed rabies viruses without becoming infected. As to natural rabies, Cornwall⁴ stated that about 35 per cent of human beings bitten by rabid dogs die of rabies, and Hutyra and Marek²¹ reported that about 30 per cent to 40 per cent of dogs bitten by rabid animals develop rabies. These reports are based on cases without treatment. In our own studies we tested 28 strains of street viruses isolated from rabid dog brains and although all the strains produced rabies in guinea pigs and mice by intracerebral injection only 5 were infectious by the intramuscular route. In our experimental methods of infection, which involved exposure of cutaneous, subcutaneous and muscular tissues to these 5 strains of street viruses, the infectivity was quite irregular. It varied from 5 to 50 per cent in mice and from 1 to 80 per cent in guinea pigs. On the other hand, the S-1 fixed rabies virus consistently infected about 70 per cent of the guinea pigs following use of the same methods of inoculation. From the information available in the literature and from our own results it appears that the infectivity of a rabies virus by the intramuscular route of inoculation depends more on the strain of virus than on whether it is a street or a fixed virus.

We realize that the methods of inoculation we used did not altogether simulate the natural inoculation occurring from a bite of a rabid animal. We believe, however, that our methods did in many respects simulate the natural mode of infection. The wounds were produced in skin and muscle tissue, and in relation to the size of the animals they were deep, extensive and ragged. The virus was deposited in the wound and then worked into the muscle tissues with the tip of a blunt

hypodermic needle as it might be by the teeth of a rabid animal in the course of biting.

The mortality rates in experiment 16, in which we attempted to locate and expose with an incision the virus that had been injected into the muscle tissues of guinea pigs were considerably higher than the rates in our other experiments. No doubt it would be difficult by such a procedure to reach all of the virus so that effective treatment could be applied. This would explain some of the difficulties involved in local treatment of deep and punctured wounds. It also emphasizes the necessity of using antirabic vaccination in addition to local treatment.

The application of fuming nitric acid to the wounds of the guinea pigs caused severe chemical burns and scarring in about 90 per cent. The wounds healed slowly, requiring about four weeks for complete healing. On the other hand, the wounds of the guinea pigs that were treated with soap solution, tincture of iodine or sulfanilamide healed in about two weeks without showing toxic effects or excessive scarring. Less than 1 per cent of the guinea pigs in these experiments contracted intercurrent infections.

The results of these experiments show that cauterization with fuming nitric acid of wounds after experimental contamination with rabies virus is of definite value in preventing rabies. They also show that irrigation with soap solution is of equal or perhaps slightly more value. When either agent was applied within two hours after the inoculation of the virus, only about one third as many guinea pigs developed rabies as among the untreated controls (tables 1 and 2). Treatment with fuming nitric acid or soap solution was only about two thirds as effective when applied in six hours as it was when employed after the thirty minute and two hour interval respectively.

As shown in experiments 17 and 18 sulfanilamide apparently did not aid in preventing rabies, neither did it appear to predispose to infection.

SUMMARY AND CONCLUSION

In experiments in which treatment of wounds contaminated with rabies virus was instituted within thirty minutes, only 11 per cent of those treated with fuming nitric acid and only 6 per cent of those treated with soap solution became infected, compared with about 63 per cent of the untreated controls. The application of treatment in two hours was apparently somewhat less effective, and its application in six hours was definitely less effective than when it was applied in thirty minutes.

In tests using a limited number of guinea pigs, the results of applying tincture of iodine within thirty minutes compared favorably with the results obtained following treatment with either fuming nitric acid or soap solution. However, when tincture of iodine was used after an interval of two hours it appeared to be considerably less effective than the other substances.

Packing the wounds with sulfanilamide after they had been treated with soap solution seemed to have no effect on the incidence of rabies.

The results of these experiments show that, in the treatment of guinea pig wounds that have been inoculated with fixed rabies virus irrigation with 20 per cent solution of soft soap is just as effective as chemical cauterization with fuming nitric acid, and possibly even more effective.

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19 Remlinger P. La rage dite de laboratoire. Ann. Inst. Pasteur (suppl.) 55:35-68, 1935.

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THE PREVENTION OF EAR AND NASAL SINUS COMPLICATIONS OF THE COMMON COLD

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Practically all infections of the ears and nasal sinuses are secondary to acute coryza or nasopharyngitis and are due to bacterial invasions. The primary inciting agent may be a virus but prolongation of symptoms and complications are caused by pyogenic organisms. Nasal and throat cultures of large numbers of patients with acute coryza show that the predominating type of organism varies from year to year. A group of nurses at the Johns Hopkins Hospital during the winter of 1943 were shown by cultures to have pneumococci in the nasopharynx and pharynx three times as frequently as beta hemolytic streptococci, while during the winter of 1942 beta hemolytic streptococci had been the commoner type. In other years *Hemophilus influenzae* predominated.

Beta hemolytic streptococci, pneumococci and *H. influenzae* are the types of bacteria most commonly found in the nose and throat during acute coryza but as mentioned their incidence varies from year to year. In 1942 beta streptococci were found in 36.2 per cent of the patients examined, while in 1943 they were present in only 11.2 per cent, *H. influenzae* was found in 29.3 per cent in 1942 and in 12.1 per cent in 1943. The incidence of pneumococci was more nearly the same—25.8 per cent in 1942 and 34.6 per cent in 1943. These figures are based on the number of cases in which these organisms predominated in several cultures. A few colonies of beta hemolytic streptococci, pneumococci and *H. influenzae* may be found in cultures of an individual with no clinical evidence of infection.

Alpha streptococci, several types of gamma streptococci, *Neisseria catarrhalis*, diphtheroids and *Staphylococcus albus* and *Staphylococcus aureus* are found so frequently in the nose and throat of normal healthy persons that they must be regarded as the normal flora of the throat, but one or more of these types, particularly staphylococci and alpha streptococci, are not infrequently found in almost pure culture in an infected ear or sinus. The designation "normal throat flora" implies that the types of organisms mentioned are present in the cultures without predominance of any one type. It is worthy of note that in 1943 the nose and throat cultures of 11.2 per cent of the nurses with signs and symptoms of acute pharyngitis or coryza were reported as showing normal throat flora, while not a single report of this kind was made during 1942. This suggests that both acute coryza and acute pharyngitis may sometimes be due to a virus or some agent other than bacteria. So-called virus pneumonia was more prevalent in this hospital during the winter of 1943 than in 1942, but only 2 of the 12 nurses with an acute infection of the upper respiratory tract and normal throat flora had virus or atypical pneumonia.

The incidence of nose and throat complications of coryza is steadily decreasing among the general population, owing to the widespread practice of the family physician and the pediatrician of giving sulfonamides by mouth for every acute infection of the respiratory tract. However, one of the objections to giving large doses of these drugs by mouth and thus saturating the entire body to prevent or to cure an infection in one small area is that approximately 30 per cent of the patients develop nausea, dizziness, fever, cutaneous rash or some more serious evidence of sensitivity to the drug.¹ The ideal procedure would be to use bactericidal and bacteriostatic agents locally in minor infections and reserve administration by mouth and by vein for the more serious spreading infections. Powdered sulfonamides have proved very satisfactory for local application in wounds but are not suitable for insufflation in the nose and throat during acute coryza. Drugs used in the nose should be neither too alkaline nor too acid and must in no way interfere with the movements of the cilia.

Pickrell^{1a} in 1941 showed that a large burned area on the skin could be kept far more sterile by frequently spraying it with 2.5 per cent sulfadiazine in ethanolamine solution than by giving sulfadiazine tablets by mouth. The sprayed material is absorbed, and the concentration of sulfadiazine in the tissues in a localized area may be six times that in the blood stream. Thus the growth of organisms in the sprayed area is inhibited and further spread of the infection is prevented. This observation is the basis for spraying the nose and throat during the early stages of acute coryza. If the treatment is begun soon after the symptoms of infection appear and is repeated at frequent intervals, the concentration of sulfadiazine in the mucous membranes and lymphoid tissue soon reaches a level that inhibits growth of the bacteria in the region and prevents extension of the infection to the ears and sinuses.

AN INVESTIGATION OF THE METHOD

Infections of the sinuses and ears commonly follow acute coryza, and physicians are greatly in need of some simple, safe method to prevent them. A controlled study was made during the winters of 1942 and 1943 to test the value of the sulfadiazine spray when used not to prevent the common cold itself but to prevent the complications. Observations were made on 103 nurses at the training school in the Johns Hopkins Hospital. Nurses were selected because their living conditions, food and working hours were uniform and because they were available at any hour during the day for observation and treatment. A special nurse was employed to carry out the treatment as directed, since it was evident that no conclusions could be reached unless the number and the frequency of treatments and the amount of sulfadiazine solution actually sprayed into the nose and throat at each treatment were known. As a rule the nose and throat were sprayed from eight to twelve times a day for the first three days and from five to eight times daily for an additional three days. Unless the cough was unusually troublesome the treatment was omitted during the night. Irritation of the skin around the external nares was prevented by frequent application of cold cream or petrolatum. Nurses were asked to report as soon as possible after the first symptoms

¹ This percentage is approximately correct for sulfanilamide, sulfathiazole and sulfapyridine, but several recent reports indicate that about 8 per cent have toxic reactions following oral or intravenous administration of sulfadiazine.

^{1a} Pickrell, Kenneth L. A New Treatment for Burns, *Bull. Johns Hopkins Hosp.* 69: 217-220 (Aug.) 1941.

From the Department of Otolaryngology, the Johns Hopkins University and Hospital.
This study was supported by a grant from the Lederle Laboratories, Inc. The sprays were donated by the DeVilbiss Company.

of an infection of the nose or throat, because it is during this phase of infection that the best results are obtained.

The routine described previously² was followed in all cases. Without their knowledge nurses reporting with colds were alternately placed in a treated and a control group. In the treated group the pharynx and both sides of the nose were sprayed with 2.5 per cent sulfadiazine in ethanolamines solution; in the control group the solvent alone was sprayed an equal number of times. In all other respects the treatment was the same for the two groups. When patients in the control group had sinusitis, otitis, severe cough or sore throat they were at once transferred to the treated group.

Cultures were made of material from the nose, the nasopharynx and the pharynx of all patients at the first examination and daily thereafter until they were discharged—a total of fifteen to twenty-five cultures for every patient. The sulfadiazine spray usually cleared up the symptoms of an infection with beta hemolytic streptococci within twenty-four hours, and occasionally these organisms completely disappeared from the cul-

clearly and no pus was seen under the anterior ends of the middle turbinates at the first examination but became apparent in subsequent examinations, the diagnosis was sinusitis even though the patient had no pain or fever. Every patient was examined daily with the transilluminator, the nasal speculum and the nasopharyngoscope during the period of observation. The incidence of the more severe type of sinusitis in the infirmity group (4.9 per cent) indicates that many of the 30 per cent in the control group would have recovered spontaneously even if they had not been transferred to the treated group and had not received the sulfadiazine spray. It seems equally evident, however, that in some a severe sinusitis was prevented by the use of the sulfadiazine spray.

Summary—A controlled bacteriologic and clinical study was made to determine the effectiveness of 2.5 per cent sulfadiazine solution in ethanolamines (Pickrell's solution) used as a spray for the nose and throat, in preventing complications of the common cold. Cultures of material from the nose, the nasopharynx and the pharynx and a complete examination of the upper air passages were made before treatment was begun and daily thereafter until the patient was discharged. Without their knowledge the nurses were alternately placed in a treated and a control group. In the first group the nose and the pharynx were sprayed with the sulfadiazine solution from eight to twelve times a day for three days and from five to eight times a day for two or three additional days, in the second group the corresponding areas were sprayed an equal number of times with the solvent alone. In all other respects the treatment was the same in the two groups. The primary object of this treatment is not to cure the common cold, which is probably initiated by a virus infection, but to prevent the bacterial infections of the sinuses, the ears and the pharynx that so commonly follow it.

COMMENT

There can be no doubt that bacterial infection is the important factor in the prolongation of symptoms, the loss of time from work and the more serious complications of the common cold.

Bacteriologic studies show that the sulfadiazine spray does not sterilize the nose and throat with the occasional exception of a beta hemolytic streptococcus infection. Some strains of this organism are so sensitive to sulfadiazine administered in this way that many patients with a red, edematous pharynx and constitutional symptoms due to streptococcal infection are cured within twenty-four hours both bacteriologically and clinically by using only 20 to 25 cc of the 2.5 per cent sulfadiazine solution as a spray.³ To get this result the treatment must begin as soon as possible after the sore throat is noticed and while the bacteria are still on the surface of mucous membrane and lymphoid tissue and accessible to the action of the drug. The results are not so good if treatment is begun after the fourth day of the disease. Other strains of streptococci and pneumococci do not disappear or noticeably diminish in numbers in the cultures, but clinical results suggest that they lose their virulence or their ability to become virulent. Extension of infection to the sinuses, ears or larynx of properly treated patients is rare. Although *H. influenzae* is presumably not sensitive to the sulfonamides, certainly the incidence of complications due to this organism seems to be reduced.

Incidence of Complications

Group Treated with Sulfadiazine Spray 2.5% in Ethanolamines (59 Patients)	Control Group Treated with the solvent (Ethanolamines 8%) (41 Patients)	Group Not Participating in This Experiment Who Reported to Infirmary with Complications of a Cold (183 Patients)
Sinusitis 9.7%. All cleared up with no local treatment other than sulfadiazine spray.	30% Patients were transferred to treated group and in all sinusitis cleared up with no local treatment other than sulfadiazine spray.	4.9% required hospitalization.
Otitis 1.8%. Cleared up with no local treatment other than sulfadiazine spray.	4.5% Patients transferred to treated group and in all otitis cleared up with no local treatment other than sulfadiazine spray.	8.7% required hospitalization tympanic membrane ruptured in 1 paracentesis done in 5.
Laryngitis No laryngitis developed in any patient during treatment.	2.8% Patients transferred to treated group.	5.4% required hospitalization.
Sore throat No sore throat developed in any patient during treatment.	10% Patients transferred to treated group.	12% required hospitalization.
Cough 8%. Cough developed during treatment.	44% developed cough.	Incidence not known.

tures after the first day of treatment. Pneumococci and staphylococci were more resistant, but evidently the drug reduces the virulence of these organisms, since the incidence of complications was much less in the treated than in the control group. Proper use of the sulfadiazine spray prevents many of the complications of the common cold. The truth of this statement is attested by the contrast between the incidence of sinusitis, otitis, laryngitis, sore throat and severe cough in the treated group, the control group and an additional group of 183 nurses who did not volunteer to take part in this study but reported at the infirmary with colds.

The incidence of sinusitis in the control group may seem high, but acute coryza is an infection of mucous membrane, and the mucous membrane of the nasal cavity is continuous with that lining the sinuses. The sinuses are infected with every cold but symptoms of sinusitis appear only when the cilia cease to function or when a thick discharge or edema interferes with drainage. In most of the cases in which a diagnosis of sinusitis was made it was based on the findings in the antrums. When both antrums transilluminated

² Bordley, John E., Crowe, S. J., Dolowitz, David A. and Pickrell, Kenneth L. The Local Use of the Sulfonamides, Gramicidin (Tyrothricin) and Penicillin in Otolaryngology. *Ann. Otol. Rhin. & Laryng.* 1:936 (Dec.) 1942.

³ The blood level for Sulfadiazine was 1.6 mg. per hundred cubic centimeters.

Some patients object to the taste. Others complain of irritation of the skin around the external nares, which can be prevented by frequent application of cold cream or petrolatum. About 3 per cent of our patients were sensitive to the sulfadiazine spray, as evidenced by sneezing and increased rhinitis. One patient developed a generalized cutaneous rash. Another patient had definite localized tissue sensitivity. A year previously her hand had been badly burned and was treated with sulfadiazine. This treatment produced a generalized cutaneous rash, which cleared up when the drug was withdrawn. The burn healed promptly and had been perfectly well for at least eleven months when she came to us with acute coryza. After three days of spraying her nose with the 2.5 per cent sulfadiazine solution the scar on her hand became extremely red and irritated. These symptoms gradually disappeared after the sulfadiazine spray was stopped. The only manifestation of sensitivity was in the scar on her hand.

The possibility exists that general sensitivity may develop in some patients, following local application of sulfonamides for a minor ailment, which might prevent administration of these drugs by mouth for a really serious illness at some future time. No evidence of this was observed, but the subject deserves the consideration and study of members of the medical profession.

SINUSITIS AND INFECTIONS SECONDARY TO THE COMMON COLD

TREATMENT WITH STABILIZED AQUEOUS SOLUTION OF SULFATHIAZOLE SODIUM WITH DESOXYEPHEDRINE HYDROCHLORIDE

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Two years ago Turnbull¹ reported that a 5 per cent solution of the sodium salt of sulfathiazole brought greater relief from the symptoms of chronic sinusitis than any other preparation he had used. It relieved congestion, opened the nasal passages, promoted drainage and relieved pressure headaches. The use of sodium sulfathiazole appeared to be a perfectly safe procedure, and the results obtained in cases of sinusitis seemed to justify further investigation. The solution was reported unstable when exposed to light and air, as it tended to crystallize and discolor.

By adding sodium sulfite we were able to make the solution stable to light, air and heat. A vasoconstrictor was then added to the solution, decreasing congestion and thus assisting the antibacterial action of the sodium sulfathiazole. dl-Desoxyephedrine hydrochloride—discovered by Ogata in 1919 and, like the original sulfanilamide, a "sleeper" for twenty years—was found to be compatible with sodium sulfathiazole and actually to form a new sulfonamide drug, desoxyephedronium sulfathiazole.

Because of the presence of this new compound, the vasoconstrictive action of the solution was so pro-

nounced that a concentration of only one eighth of 1 per cent of dl-desoxyephedrine hydrochloride was necessary to obtain adequate shrinkage of the acutely congested membranes of the nose. Such activation is known as synergism, and this was demonstrated by clinical and laboratory work.

Synergism permitted the use of a very small proportion of the vasoconstrictor and therefore appeared to give the optimum clinical results—shrinkage of swollen tissues, drainage and ventilation of the sinuses without the after-effects so commonly experienced with prolonged use of vasoconstrictors, such as secondary congestion of the membrane, sneezing, sleeplessness, nervousness and tachycardia. Further, the incorporation of a vasoconstrictor enabled the sodium sulfathiazole to reach the deeper layers of the nasal mucous membrane.

Our results have shown that if the solution is used early in colds many were apparently aborted and also that the pressure pains in the acutely blocked sinuses were relieved. The stable, vasoconstrictive solution used in packs in the nose on acutely swollen membranes and left in place for twenty to thirty minutes effected noticeable relief and patients reported improvement the day following treatment instead of the usual complaints after former methods of treatment with comments of "no relief" or "worse with a sleepless night."

CLINICAL EXPERIENCE

In our experience of over 1,000 cases of nose, throat and ear infections, the following conditions have been treated:

Sinusitis, acute and chronic frontal, maxillary, ethmoid, sphenoid

Rhinitis, pharyngitis, laryngitis, tracheitis, acute and chronic
Otitis media suppurativa, acute and chronic

In acute sinusitis with headaches and in acute head colds it is well to saturate the packs with the solution and place as high in the nose as possible without discomfort. If the nose is very sensitive a spray of 1 per cent solution of cocaine may be used first. The patient should be lying down (modified Proetz position), and at five minute intervals instillation of from 10 to 15 drops in each side of the nose should be continued until the swollen tissues are sufficiently shrunk to give relief from pressure. This usually takes twenty to thirty minutes in severe cases. In this way a very complete shrinkage of the congested mucous membrane results without blanching, sneezing or subsequent swelling.

For home treatment patients were instructed to use spray or drops with sufficient frequency to keep the nose open. At the beginning of the treatment this often necessitated using spray or drops at five minute intervals usually two or three times until the deeper tissues in the nose were reached.

Chronic sinusitis was treated by irrigating the affected sinuses and following with the instillation of the solution into the sinuses together with the use of spray or drops at home.

Acute pharyngitis and laryngitis were treated by spraying the nose and throat and, in office treatments, the larynx and upper trachea.

Acute suppurative otitis media was treated by myringotomy and medicated tampons in office treatment, and by drops in the ear and nose and in the epipharynx by the patient at home.

From the Research Laboratory, Chemical Division, Lockheed Aircraft Corporation.
¹ Turnbull, F. M. Intranasal Therapy with Sodium Salt of Sulfathiazole in Chronic Sinusitis. J. A. M. A. 116: 1899-1900 (April 26) 1941.

Chronic suppurative ears were treated by cleaning thoroughly with peroxide, followed by insertion of tampons, home treatment consisted in the prescribed use of drops

This type of treatment we have found safe and effective. In children the treatment has been especially effective, particularly when the nose was blocked from colds and acute or chronic sinusitis. Packs used in the swollen nose opened it up and gave relief without discomfort, so that the child soon overcame fear of treatment.

For elderly people, and in systemic involvements in which surgery is contraindicated, the therapy has offered a form of treatment that has produced considerable relief.

SAFETY AND EFFECTIVENESS IN SPECIAL CASES

Membranous Laryngitis of Alpha Streptococcus Origin—The patient's blood count showed leukocytes 3,300 following oral administration of six tablets of sulfadiazine over a period of twelve hours. Stable sulfathiazole solution was used as a spray in the nose throat and larynx every hour. The following day the

Variation in pH

Compound	pH
1% neosynephrin (Stearns)	2.5-4
Isophren solution (Brommel)	2.5-4
1% propadrine (Sharpe & Dohme)	3.2-5
2% ephedrine solution (Lilly) (single sample)	3.9
Glucocedrin (Parke Davis)	4.8-5.8
Isadrin compound (1% ephedrine sulfate) (Lilly) (single sample)	6.0
5% solution of mild protein eliver (single sample)	8.0-9.1
Metaphedrin Aqueous Isotonic (Abbott) (single sample)	10.0
1% ephedrine compound in oil (Lilly) (single sample)	10.5

Values given are subject to changes dependent on the age and condition of the preparations.

The pH of stabilized sodium sulfathiazole solution with dl-desoxyephedrine hydrochloride is 8.6-9.

leukocyte count had risen to 5,300 and the next day to 7,000 with clearing of the membrane in the larynx.

Acute Infectious Mononucleosis with Acute Alpha Streptococcus Membranous Tonsillitis—The patient was seen at the hospital on the twelfth day of the disease. The temperature was 104 F, leukocytes 14,800, polymorphonuclears 14 per cent, lymphocytes 83.5 per cent. Sulfathiazole orally with local use of stable sodium sulfathiazole solution brought the temperature to normal on the third day. A membrane which had covered the tonsil and part of the pharynx, with dyspnea, disappeared.

Six unfavorable reactions have occurred in over 1,000 cases, in 4 the nasal congestion was not relieved or was made worse, in 1 a skin reaction resulted, around the nose, in 1 there was a rise in temperature. All these patients were allergic to the sulfonamides.

ALKALINITY

Comparative study of nose drop medications shows wide variations in pH , as presented in the table.

It is indicated that a mildly alkaline sulfonamide solution is preferable for nasal medication because

1 The sulfonamides have the greatest bacterial action in the pH range of from 8 to 10 (Schmelkes and Wyss²)

2 Schmelkes Franz C. and Wyss Orville. The Synergistic Action of Sulfonamides Wetting Agents and Azochloramid. J. Bact. 43: 71 (Jan) 1942.

2 Ciliary motility shows greatest activity in the pH range of 8.2-8.6 and slows down in slightly acidic solutions, pH 6.5 or less (Negus,³ Gray,⁴ Schäfer⁵). Use of stabilized aqueous sodium sulfathiazole with dl-desoxyephedrine hydrochloride has been shown to allow ciliary action to continue for a long period of time.⁶

3 Effective concentrations of the sulfonamides are readily obtainable in mildly alkaline solutions.

TOXICITY

Hunnicut⁷ states that in the mouse there are no permanent ill effects from the use of a 5 per cent solution of sodium sulfathiazole (not stabilized), there is a pronounced inflammatory reaction the first few days and after this the effect on the mucosa is almost nil.

The olfactory membrane, which is first affected when irritating drugs are used, as Turnbull had previously found, is not injured.

The toxicity of desoxyephedronium sulfathiazole has been studied by Richards⁸ who reports that "toxicity of the compound is certainly not greater than that of desoxyephedrine itself."

BACTERIOSTATIC AND SELF-STERILIZING PROPERTIES⁹

In a test for self-sterilizing properties of the stable sodium sulfathiazole solution it was found that "there is a gradual diminution of bacteria over a period of six hours, but about one sixth of the total number inoculated still remains viable at this time."

Stable sodium sulfathiazole solution was also submitted to a cooperating university laboratory to determine if the action of sodium sulfathiazole against *Staphylococcus aureus* was in any way altered by virtue of its chemical combination with dl-desoxyephedrine hydrochloride. It was found that "the average percentage inhibition of hemolytic *Staphylococcus aureus* in tryptone broth by sulfathiazole (125 mg per hundred cubic centimeters) was 73.0, and by sulfathiazole (125 mg per hundred cubic centimeters) when combined with dl-desoxyephedrine hydrochloride at pH 7.8 was 70.3."

CLINICAL OBSERVATIONS

In acute colds, stable sodium sulfathiazole solution combined with dl-desoxyephedrine hydrochloride treatment resulted in rather prompt relief and the duration of the infection was apparently shortened. This was also true in acute sinusitis with less tendency to become subacute or chronic.

In chronic sinusitis many cases reacted favorably where formerly surgery would have been indicated. There is no intention to suggest that this is a cure or that it substitutes for surgery when massive pathologic changes of the membrane or bone exist but indications are that it will greatly reduce the number of sinus surgical operations that might otherwise be necessary.

Acute suppurative otitis media has been a much less frequent complication. Chronic suppurative otitis media that has resisted other forms of treatment has cleared up without a radical mastoid operation.

3 Negus, V. E. The Action of Cilia and the Effect of Drugs on Their Activity. J. Laryng. & Otol. September 1934.

4 Gray, J. The Effect of Ions on Ciliary Movement. Quart. J. Microscop. Sc. 64, 1930.

5 Schäfer, E. A. The Essentials of Histology. 1907.

6 Reported in personal communication from the Squibb Institute for Medical Research.

7 Hunnicutt, Leland G. Reaction of Five Per Cent Solution of Sodium Sulfathiazole. Arch. Otolaryng. 36: 837 (Dec.) 1942.

8 Richards, R. K. Personal communication to the authors.

9 Report by the Medical Research Laboratory of Parke Davis & Co.

CONTINUOUS CAUDAL ANALGESIA

AN ANALYSIS OF THE FIRST TEN THOUSAND
CONFINEMENTS THUS MANAGED WITH
THE REPORT OF THE AUTHORS'
FIRST THOUSAND CASES

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"The Poena Magna, the chief or the great pain of the Romans which referred to the pangs of childbirth, has been the object of attack by medicine men, midwives and physicians for centuries. The fear of it in the hearts of women has been a contributing factor to childless marriages and one of the major factors of the one-child family in our present civilization. The absolute alleviation of it in selected cases has been accomplished by continuous caudal analgesia.

"The failure of medicine men and midwives to deal with this pain adequately, if at all, compelled women in labor to seek the services of physicians. The cries of women in pain, not usually fears concerning the welfare of unborn babies have brought physicians to the bedside. With physicians came poppy leaves and bitters, wine and morphine ether and chloroform, nitrous oxide and scopolamine, paraldehyde and the barbiturates, cyclopropane and ethylene, avertin and hypnotism. Yet women in travail still cried out through muffles of anesthesia, screens of analgesia and curtains of amnesia as they were delivered of babies in varying degrees of narcosis and anoxemia."¹

Continuous caudal analgesia was designed to relieve the pains of labor and delivery. Properly administered it furnishes a comfortable labor and delivery, and a vigorous, crying baby in the overwhelming majority of instances.

The history of the development of caudal and continuous caudal analgesia has been described in detail in numerous medical publications.²

Our purpose in this paper is to report the first 10,000 cases managed with continuous caudal analgesia in North American medical schools and teaching hospitals and to present the results of our first thousand cases so managed. It seems timely to discuss the modifications and improvements in the technic which have developed with increasing experience. It is also desired to discuss in detail the indications and contraindications based on the accumulated experience of many physicians. Finally, we desire to present frankly all the complications thus far encountered and the precautions necessary to avoid them.

The accompanying questionnaire was sent to obstetric clinics several months after we had presented teaching demonstrations in them. These reports indicated that 10,000 obstetric labors and deliveries were managed

with continuous caudal analgesia with the incidence of success indicated in the results of fifty-five clinics.

The percentage of success with this method seemed to vary directly with the experience of the operator, and the percentage of complications and failures seemed to vary inversely with the experience of the operator.

In our series of 1,150 cases, 1050, or 91.3 per cent have been managed through labor and delivery without resorting to any other form of analgesia or anesthesia. The reasons for supplementary anesthesia have been

1 The inability to insert the needle in the canal, or faulty insertion recognized within one hour. Sixty-five cases, or 5.6 per cent.

2 Increased anxiety on the part of the patient with emotional distress, which indicated sedation and general anesthesia. Twenty-three cases, or 2 per cent.

3 The accidental escape of the needles in 5 cases, or 0.43 per cent. It was decided that reinsertion in these cases would increase the hazard of infection.

4 Cases of monsters or abnormal babies as previously determined by x-ray. Five cases, or 0.43 per cent.

5 Discontinuance of the procedure because of the reaction of the patient. One of these was a case with convulsions in which an overdosage of the drug had been given. The other was a case in which there was a manifest increase of nausea and vomiting. Two cases, or 0.17 per cent.

The other 1,050 cases were managed successfully through labor and delivery with continuous caudal analgesia. During this time the patients were usually kept on their sides. Occasionally, when the level of analgesia rose to a higher level on the dependent side the patient was turned to the opposite side.

All the patients were offered every meal, and they were able generally to partake of fluids and nourishment before and after delivery.

Of the 1,050 patients whom we managed successfully with continuous caudal analgesia, 679 were primiparas and 371 multiparas. The average length of analgesia for primiparas was six and one-half hours and the average dosage of metycaine was 4.5 Gm. The average time of analgesia for multiparas was two hours and twenty minutes and the average dosage of metycaine was 2 Gm.

Since the introduction of continuous caudal analgesia with the malleable needle technic we have tried constantly to improve our apparatus and refine our technic in order to provide the maximum of safety to the patient in addition to developing the facility of administration for the doctor. Some of the technical difficulties reported in the earlier part of our series were overcome with the perfection of our present instrument. While we have used this apparatus almost exclusively for all of our series, other physicians, in an attempt to prevent the recurrence of the early difficulties of needle breakage, have devised other forms of apparatus and modified technics.

Thus far from the literature there have been reported three important methods of administration of continuous caudal analgesia:

1 The malleable needle technic with the closed circuit apparatus.

2 The ureteral catheter technic with both closed and broken circuit apparatus.

3 The continuous drip caudal analgesia technic with the closed gravity apparatus.

The special malleable needle technic with the closed apparatus has been used by us in 1,000 of our cases. Of the 10,000 cases reported, this technic has been used in 6,400 cases. This is the technic of fractional dosage

Published with permission of the Surgeon General, U. S. P. H. S.
1 Pitkin, G. P. Conduction Anesthesia, St. Louis, C. V. Mosby Company, to be published.

2 Edwards, W. B., and Hingson, R. A. Continuous Caudal Anesthesia in Obstetrics. *Am. J. Surg.* 57: 459 (Sept.) 1942. Hingson, R. A., and Southworth, J. L. Continuous Caudal Anesthesia. *ibid.* 58: 93 (Jan.) 1942. Hingson, R. A., and Edwards, W. B. Continuous Caudal Anesthesia During Labor and Delivery. *Anesth. & Analg.* 21: 301 (Nov. Dec.) 1942. Continuous Caudal Analgesia in Obstetrics. *J. A. M. A.* 121: 225 (Jan. 23) 1943. Southworth, J. L., Edwards, W. B., and Hingson, R. A. Continuous Caudal Analgesia in Surgery. *Ann. Surg.* 117: 321 (March) 1943. Irving, F. R., Lippincott, C. A., and Meyer, F. C. Continuous Caudal Anesthesia in Obstetrics. *New York State J. Med.* 43: 1023 (June 1) 1943. Hingson and Edwards.³ Edwards and Hingson.⁴

in which an initial dose of 30 cc of 1.5 per cent metycaine is used as soon as the labor has been definitely established to relieve subjective pain. Supplementary doses are injected at intervals varying from forty minutes to an hour and a half.

In our hands it has given increasing satisfaction with the minimum of complications. We have been able to teach this technic readily to others with greater facility than would be experienced in teaching the catheter and the continuous drip method.

Nevertheless each method has its own merits and demerits which should be thoroughly understood before its use is attempted.

In our preliminary studies we used the following cocaine derivatives and substitutes in varying concentrations and solutions of distilled water isotonic solution of sodium chloride, isotonic solution of three chlorides (Ringer's solution) and isotonic Ringer-metycaine modified solution (1) procaine hydrochloride, (2) metycaine, (3) pontocaine, (4) nupercaine, (5) monocaine and (6) eucupin.

pressor substance as we did with procaine and pontocaine. When an obstetric patient is able to keep up her normal fluid intake during labor and when the level of analgesia is not permitted to rise above the umbilicus less than 8 per cent of parturients will have a blood pressure drop of more than 20 mm of mercury and this drop is usually symptomless.

In cases of persistent vomiting in labor in which dehydration is also a problem any local anesthetic agent exerting a block of the white ram communicans presents a hazard that must be overcome by judicious use of a vasopressor substance, intravenous fluids and oxygen when the patient has a high degree of anemia.

ANATOMIC AND PHYSIOLOGIC CONSIDERATIONS

In a comprehensive review of continuous caudal anesthesia for anesthetists we stated that

The anatomic proximity of the sacral hiatus to the nerves of the pelvis, perineum and the lower extremities makes this method applicable to all types of obstetric and gynecologic procedures. The peridural space surrounding the dura mater

Results of Questionnaire

	North American Clinics		Authors' Series	
	Number	Per Cent	Number	Per Cent
A Number of cases managed with continuous caudal analgesia	10 000		1 150	
B Number of cases with complete relief of pain	8 100	81	970	80.0
C Number of cases with partial relief of pain	1 200	12	130	12.2
D Number of cases considered as failures	700	7	100	8.8
E Complications to the mother				
1 Immediate reactions following injection				
2 Number of cases with fall in blood pressure exceeding 20 mg of mercury in systolic reading	110	2.1	8	
3 Increased nausea sometimes associated with vomiting	870	8.7	46	4.0
4 Infection at site of injection	690	6.9	50	4.5
(a) Simple cellulitis around site of injection				
(b) Severe cellulitis or peridural abscess	80	0.8	3	
5 Broken needles	5	0.05	1	
6 Post delivery headache	30	0.3	0	
7 Neurologic sequelae attributed to method	40	0.4	3	
(These include urinary retention with need for catheterization more than once post partum, residual backache, hypesthesias)	280	2.8	3	
F Complications to the fetus				
G Maternal mortality attributed to continuous caudal analgesia	70	0.7	3	
H Uncorrected fetal mortality	4	0.04	1	
I Fetal deaths presumed to be due to continuous caudal analgesia	101	1.0	16	1.4
J Average interval between induction of analgesia and delivery. There are many answers to this question varying from 3½ to 8 hours	2	0.02	1	
K Observations regarding blood loss. 69 of the 68 doctors reporting indicated that the blood loss was less with continuous caudal analgesia than with other methods				

We prefer a 1.5 per cent solution of metycaine in isotonic solution of sodium chloride or isotonic solution of three chlorides because of the (1) high analgesic efficiency of the drug, (2) the reduced number of reactions that could be ascribed to the drug and (3) the rapid elimination of the drug with a quick recovery of nerve impulses and physiologic control after delivery.

However, we have found that some analgesia could be obtained with all the drugs mentioned. Procaine, pontocaine and monocaine in many instances gave results closely approximating the relief we achieved with metycaine. Recently we have reviewed all our original comparative experiments with these various drugs after the report of Irving, Lippincott and Meyer with an indicated preference for pontocaine and the report of Siever and Mousel with a preference for procaine.

We have found that the blood pressure falls have been in direct proportion with the anesthetic efficiency of the drug and are apparently due to the pharmacologic effect of producing splanchnic and lower extremity peripheral vasomotor block. We find no evidence to indicate that the blood pressure drop is associated with the toxic effect of the drug used. In the greater number of our continuous caudal injections with metycaine we did not use a prophylactic vaso-

as a sleeve from the foramen magnum to the hiatus sacralis comprises the area between the dura mater and the periosteum lining the spinal canal but usually at the second sacral segment communication between these two parts is interrupted by the closure of the dura mater around the nerve trunks. In dissection of cadavers we found that the dura sometimes encircles the spinal nerves of the cauda equina and the filum terminale, with its distal sac extending no farther down the vertebral column than the fifth lumbar segment. In approximately 0.5 of 1 per cent it extends all the way to the fourth or fifth sacral segment. In these instances spinal fluid can be obtained by inserting a short needle through the sacral hiatus. While this phenomenon has been observed by one of the authors in only 9 in 2 000 caudal injections, the occurrence of anomalies and malformations of the vertebral and spinal canals should be kept in mind.

On the outer surface of the dura in the epidural space, especially at the sides, are extensive venous plexuses which may be penetrated with the caudal needle. The operator should attempt to direct his needle always in the midline and just under the bony roof of the sacral canal in order to minimize this hazard.

The sacral canal terminates below in the hiatus sacralis forming a triangular opening the sides of which are marked by bony ridges known as the sacral cornua. This opening varies in different individuals. It may be abnormally large, owing to a deficiency in one or more of the vertebral arches, or it may be reduced even to the extent of complete obliteration by ossification.

We have also noticed in dissecting these peridural spaces that a median fenestrated, fibrous raphe is not uncommonly produced by the continuation of the dura along minute nerve fibers extending upward between the spines and the periosteum of the vertebral arches.

Nerve Supply to the Uterus—The classic work of Head, Sherrington and Cleland established that the uterus derives its extrinsic nerve supply from three sources, that is, the motor fibers to the uterus are derived from the sympathetic nerves of the aortic plexus reinforced by fibers from solar, renal and genital ganglions, the sensory fibers are derived from sympathetic nerves and ganglions of the eleventh and twelfth dorsal spinal segments and the sensory and motor fibers to the cervix and also to the birth canal are found in the sympathetic and parasympathetic plexuses communicating with the second, third and fourth sacral nerves. The perineum receives its nerve supply from pudendal and perineal plexuses from the lower somatic sacral nerves. Thus a peridural injection through the sacral hiatus of 30 cc blocks all the sensory fibers to the uterus and birth canal, but the motor fibers sending impulses from higher levels are untouched. We have substantiated Cleland's thesis in our dissection of cadavers and in our clinical observations on more than 1,000 patients. A total of 30 cc of indigo carmine was injected into the sacral hiatus of 60 cadavers. Dissection of the peridural space in every case revealed that the dye disseminated at least as high as the eleventh and never higher than the sixth dorsal segment. Clinically it was found that when there is analgesia of the skin over the distribution of the ilioinguinal nerves (receiving components as high as the twelfth dorsal segment) and the eleventh thoracic nerves, on both sides, there is always complete subjective absence of labor pains. Usually the initial dose of 30 cc of 1.5 per cent metycaine produces this analgesia. Unless the anesthetic solution ascends this high in the peridural space, the parturient experiences discomfort.³

When the analgesic agent is permitted to ascend to the higher levels of the thoracic peridural space there is diminution in the force and frequency of the uterine contractions with a retardation of the progress of labor noted. This observation has recently been substantiated with both the Murphy and Fenning tocographic determinations.

MALLEABLE NEEDLE TECHNIC AS RECOMMENDED BY AUTHORS

1 The patient is placed in the modified left lateral Sims position. The sacral and coccygeal area is cleansed with ether and prepared with one of the antiseptic tinctures.

2 The tip of the coccyx is palpated with the middle finger of the left hand, and the thumb is used to find the U or V shaped notch indicating the sacral hiatus between the sacral cornua. This is usually about 1½ or 2 inches from the tip of the coccyx. In cases in which there was a failure of the inferior sacral arches to fuse into the bony roof of the sacrum, this hiatus may be 2½ to 4 inches from the inferior caudal tip. Experience with the standard single caudal injections is a desired prerequisite for the success in the use of the continuous method.

3 The middle finger of the left hand then changes place with the thumb and marks the spot for raising the initial skin wheal.

4 A special apparatus has been developed for this procedure. The analgesic agent recommended by us is 1.5 per cent metycaine in isotonic solution of sodium chloride. Two Gm of the drug diluted in approximately 125 cc of saline solution in the reservoir bottle will most nearly approach this concentration. With a few cubic centimeters of this solution, skin anesthesia

is obtained by raising a skin wheal with a 25 gage, and deeper infiltration to the sacrococcygeal ligament with a 2 inch 22 gage, needle.

5 The special malleable stainless steel 19 gage needle is then inserted in the midline in the direction of the hiatus at about a 45 degree angle with the skin.

6 As soon as the bevel of the needle pierces the sacrococcygeal ligament, its reinforced metal collar is depressed through an arc of 1 to 3 cm and the needle is thrust slowly and evenly in the midline for 1 to 2 inches within the sacral canal, where its bevel should lie inferior to the lowest extent of the dural sac. This may be ascertained by measuring on the skin with the stilet the approximate extent of the needle. The point of the needle should always be below the level of the second sacral spine.

7 The small section of tubing with special adapter is then slipped over the collar of the needle. The Luer-Lok syringe is securely attached to the adapter. A careful aspiration is performed.

(a) Should clear spinal fluid be obtained, the needle has pierced the dura and lies within the subarachnoid space. In such event the needle should be immediately withdrawn and the case ruled unsuited for caudal analgesia for fear of producing a massive spinal injection of the analgesic drug. Anatomic anomalies with such low lying dura are rare. (In our experience this has happened only twice in more than one thousand injections.) A failure to recognize this situation would be extremely hazardous, if not fatal.

(b) The withdrawal of pure blood indicates that the needle has pierced a small blood vessel in the highly vascular peridural space. In this event the point of the needle should be moved until blood can no longer be obtained. Then the injection is continued cautiously.

8 The danger of intraspinal injection, with appearance of spinal fluid previously mentioned (see 7) can be minimized if a trial dose of 8 cc of the solution is injected and further action delayed for ten minutes to see that a low spinal anesthesia does not ensue. Without relief of pain or loss of motor power in the lower extremities in ten minutes after injection, one can safely assume that the subarachnoid space was not entered.

9 After these precautions have been carried out the hose end of the special 4 foot rubber tubing is secured over the collar of the special caudal needle. The tubing should previously have been connected to the remainder of the apparatus, all air having been expelled by filling the entire system with metycaine solution.

10 With the palm of the left hand firmly pressed over the skin area against the dorsum of the sacrum, 30 cc of 1.5 per cent solution is slowly injected.

11 Five per cent sulfathiazole ointment is then generously spread around the collar of the needle.

Indications that the Solution Is Being Injected into the Peridural Space of the Sacral Canal—(a) The patients usually experience a sense of fullness progressing to an uncomfortable sensation in one or both legs as the solution circumscribes the perineural components of the sciatic nerves. This sensation can be minimized by slower injections.

(b) There will be a progressive analgesia in the areas supplied by the coccygeal, hemorrhoidal, perineal, pudendal, ilioinguinal and iliohypogastric nerve. Analgesia should be complete in twenty minutes.

(c) There is relief of abdominal uterine cramps within five to fifteen minutes after injection.

³ Hingson, R. A., and Edwards, W. B. Comprehensive Review of Continuous Caudal Analgesia for Anesthetists, *Anesthesiology* 4: 181 (March) 1943.

(d) Pronounced vasodilatation, cessation of sweating and increase in temperature of the skin of the feet will ensue within five to fifteen minutes after injection. This phenomenon is often noticed on one side several minutes before it occurs on the other.

Indications that the Solution Is Being Injected Outside the Sacral Canal—(a) Failure of the injection to relieve pain within thirty minutes. (b) The appearance of an "injection tumor" superficial to the dorsum of the sacrum.

Supplementary Injections—12 The supplementary injection will depend on the rate of metabolism of the drug by the individual patient. In our experience 20 cc of additional solution injected every thirty to forty minutes is sufficient to keep the parturient comfortable for the entire course of labor. We have continued our supplementary injections for a maximum of thirty hours and for an average of seven hours.

We consider this method of analgesia to be a specialized procedure which requires special training in order to attain uniform satisfactory results.

INDICATIONS FOR THE USE OF CONTINUOUS CAUDAL ANALGESIA

There are certain obstetric conditions which indicate the use of continuous caudal analgesia for both the mother and the child.

Premature Babies—The use of any sedative, amnesic or anesthetic is contraindicated in the case of premature or small poorly developed babies. All these drugs have been shown to be transplacental and have been rightly accused of obviating the vital mechanisms of the fetus during and for several hours after birth. The survival of these babies is difficult enough without the addition of narcotic, hypnotic and anesthetic influence to their undeveloped respiratory and cardiovascular mechanisms.

Thus far in our series we have managed the labors of 20 women with premature infants ranging in age of development from 26 to 36 calculated weeks and from 2 to 6 pounds (0.9 to 2.7 Kg) in weight. In only 1 of these cases was there a stillborn infant. The others breathed spontaneously after delivery. It was not unusual for these babies to cry before their shoulders were delivered during a vertex presentation, and four breech deliveries in this group were entirely satisfactory. The progress of these babies during their first postpartum days seemed to us more favorable than premature infants managed by us and in other clinics delivered through other managements.

There are certain physiologic reasons why the premature infants do so well under continuous caudal analgesia.

- 1 Labor is generally shorter and usually spontaneous.
- 2 The lower uterine segment, cervix and perineum and birth canal of the mother are completely relaxed, producing the minimum of trauma to the baby's head in passage through the birth canal.
- 3 Convulsive and voluntary expulsive muscular powers of the mother are not suddenly brought to bear on the contracting uterus, thus increasing the intrauterine pressure around the body or head of the baby.

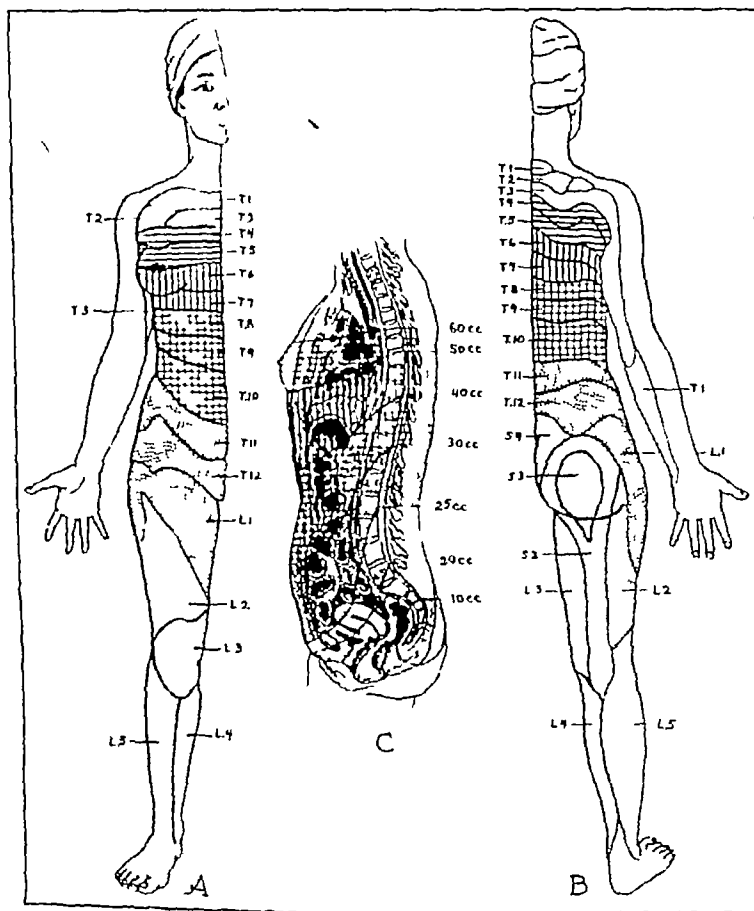
4 The mothers during these labors, alert and usually cheerful, are not secreting various harmful endocrine products such as epinephrine during moments of pain, anxiety and fear.

5 The blood sugar level and fluid balance of the mothers approach normal since they are able to keep up their fluids and foods. Therefore the hazard of dehydration and hypoglycemia is not added to the dangers of prematurity.

6 The baby may be delivered deliberately with no sudden and traumatic manipulations by the obstetrician, as he controls the passage of the baby as it will.

7 The minimum of blood loss and systemic shock to the mother prepares the physiologic stage for the prompt formation of maternal milk, which is vital to the premature infant.

Heart Diseases—We were impressed early in our series with the well being of cardiac patients under continuous caudal analgesia.



Segmental analgesia produced with indicated caudal doses of 1.5 per cent metycaine solution (courtesy of Pitkin's Conduction Anesthesia).

There are certain physiologic phenomena which add to the burden of a diseased heart during the process of natural labor: (1) the emotional strain of the patient often associated with cries of pain, (2) fear of what the next few hours will bring forth, (3) tachycardia, (4) voluntary straining. All of these increase the demand on a diseased heart. In some cases an actual decompensation with permanent myocardial damage develops. The stress and strain of labor has been known to account for an anoxemia which would contraindicate a general anesthetic.

The patient under continuous caudal analgesia, however, is at ease and does not need her voluntary expulsive efforts. The rhythmic contractions of the uterus will expel the presenting part into the birth canal and will usually deliver it to the point of perineal bulging.

From this point, outlet forceps or episiotomy will deliver the baby without adding to an already taxed circulatory system. In labor and delivery the patient remains relaxed and keeps up fluids and nourishment.

In our series we have had 2 grade 4, 3 grade 3 and 8 grade 2 cardiac patients, who have done exceptionally under continuous caudal analgesia. All of them have delivered live babies who cried spontaneously.

Use in Eclampsia—We have used continuous caudal analgesia in 3 cases of eclampsia, 1 case of postpartum eclampsia and 8 cases of preeclampsia. In all these cases except the one of postpartum eclampsia the analgesia was begun well after labor was established.

The systolic blood pressures of all these patients ranged from 160 mm to 260 mm of mercury. The diastolic pressure ranged from 110 to 150 mm of mercury. Most of the cases presented other manifestations including the presence of albumin in the urine, one or

The following indications for these sections are presented to illustrate the wide margin of safety in the method.

1 A twin pregnancy in a patient who had massive contractile scars from an old burn of the perineum.

2 A twin pregnancy with disproportion of the babies to the inlet. This was a case of a double breech in which one baby weighed 6 pounds 12 ounces (3 Kg) and the other weighed 6 pounds (27 Kg).

3 Two patients with viable babies and previous eclamptic convulsions.

4 Two patients with active pulmonary tuberculosis.

5 Two patients with heart disease and decompensation.

The remaining 7 were indicated because of x-ray evidence of disproportion.

There was no maternal or fetal mortality in our series. The morbidity of mothers and babies appeared to be less than usual. The blood loss was greatly

TABLE 1—Advantages and Disadvantages of All Techniques Currently Advocated

Technic	Chief Advantages	Chief Disadvantages
Malleable needle technic as introduced by Hingson and Edwards ² and used by Greedy and Hasseltine	<ol style="list-style-type: none"> 1 Simplicity and safety of needle insertion and drug administration 2 Minimum of trauma to peridural space 3 Accurate control of all subsequent dosage so that each case may be individualized according to metabolism of drug by patient 4 Possibility of infection reduced through maintaining a closed apparatus throughout labor and delivery 	<ol style="list-style-type: none"> 1 Needle breakage within sacral canal (use of the special malleable needle of stainless steel discarding it after each 5 cases) 2 Cannot be used in disoriented or uncooperative patients as the eclamptic and patients with toxic and functional psychoses because of uncontrolled movement 3 Needle occasionally slips out during course of labor
Ureteral catheter technic as described by Adams, Lundy and Seldon (J. A. M. A. 122: 162 [May 15] 1948) and Manalan (J. Indiana M. A. 35: 564 [Oct. 1] 1942) and modified by Irving, Lippincott and Meyer ² and Slevor and Mousel ²	<ol style="list-style-type: none"> 1 Possibility of intrathecal injection almost nil 2 May be inserted before labor when patient is not excited or in pain 3 Definitely is method of choice in eclamptic and disoriented patients 4 For cesarean section may be inserted safely into peridural space for 6 to 8 cm with more prompt high analgesia 5 Allows greater freedom of movement for patient in labor with diminished possibility of catheter slipping out, or producing trauma after large 18 gage needle has been withdrawn 	<ol style="list-style-type: none"> 1 Greater skill required for insertion of large needle and catheter 2 Greater incidence of peridural hematoma because of large needle 3 Large portal for potential infection opened with 18 gage needle 4 More serious consequences from penetration of bone marrow of sacral corpora rectum and even cranial vault of baby in hands of untrained 5 Large port of entry may serve as source of leakage of solution through backflow 6 Unilateral analgesia more common owing to deviation of catheter
Continuous (gravity) drip technic as developed independently by Block and Rotstein (J. A. M. A. 122: 582 [June 20] 1943) and by Posner and Buch (Am. J. Surg. 60: 396 [June] 1943)	<ol style="list-style-type: none"> 1 Episacral insertion of needle more easily recognized since pressure with hand over dorsum of sacrum stops the flow of the gravity drip 2 Apparatus simplified 3 Necessity for repeated handling of apparatus reduced, thereby reducing possibility of infection 	<ol style="list-style-type: none"> 1 Less accurate control of analgesia 2 Necessity of constant attendance by nurse or doctor to watch level of analgesia 3 Amount of drug used during labor and delivery more, since much will leak out lower sacral and lower lumbar intervertebral foramina 4 Possibility of needle breakage or dislodging increased with patient constantly on back 5 Hazard of infection increased with patient on back to offset advantage of less handling of apparatus

more convulsions and constricted retinal vessels with hemorrhages and complained of dizziness, headache or blind spots.

Within twenty minutes after the caudal injection was instituted there was noted

1 A slow progressive blood pressure fall, frequently amounting to 100 mm of mercury within one hour. Associated with this reduction in vascular tension there was a warming, blushing and drying of the lower extremities similar to that following bilateral lumbar sympathectomy.

2 There was an increase in the urinary output with a reduction in the concentration of the urine. We explain this phenomenon by the suggestion that the sympathetic nerve supply to the kidneys was blocked, with the corresponding maximum dilatation of the glomerulus and afferent arterioles.

3 Convulsions were controlled without resort to other forms of sedation.

4 The mental cloudiness of these patients cleared remarkably, they became more cooperative and 3 of them were able to take fluids and small servings of food.

5 There was no appreciable change in the heart rate of the fetus, and all of them were delivered without mortality or unusual postpartum morbidity.

Use in Cesarean Section—Our series includes fifteen cesarean sections with continuous caudal analgesia

reduced and comparable with that obtained with spinal anesthesia.

Since the technic of administering the caudal analgesia varied in cesarean sections from that already outlined in obstetric delivery it is outlined as follows:

1 The patient is given no preoperative sedation or medication of any kind.

2 The drug and the dosage that we prefer consist of 1.5 per cent metycaine in 125 cc of isotonic solution of sodium chloride or isotonic solution of three chlorides to which 6 minims (0.36 cc) of 1:1,000 epinephrine has been added.

3 The continuous caudal needle and apparatus are inserted and handled as for obstetric analgesia.

4 An initial test dose of 8 cc. is administered with careful check by aspiration to prove that the needle is not within the subarachnoid space or a blood vessel.

5 A supplementary dose of 40 to 60 cc, depending on the size of the patient, is then administered. The patient is then placed on her back, and the level of analgesia is tested in twenty minutes.

6 If the level of analgesia has not gone above the umbilicus on both sides, a supplementary third injection of 20 to 40 cc. according to the need of the patient is administered.

7 When the level of analgesia is complete on both sides to the height of the eighth dorsal segment, the operation may be begun.

8 Should the blood pressure fall below 80 mm of mercury 25 mg of ephedrine should be given intravenously and the patient placed in a 5 to 10 degree Trendelenburg position

The level of anesthesia is complete on both sides to the height of the eighth dorsal segment usually about thirty minutes after the first injection. In the debilitated patients seriously ill with tuberculosis or heart disease, the procedure should be instituted forty-five minutes to one hour before operation and the level of analgesia developed more slowly.

COMPLICATIONS ASSOCIATED WITH CONTINUOUS CAUDAL ANALGESIA

Broken Needles—In the early days of our development of this procedure we had a total of eight needles to break during the course of the administration of the analgesia. Seven of these needles broke off at the hub. These needles were malleable german silver which were advocated in the use of continuous spinal anesthesia, and not stiff steel needles. Four of them had to be removed by surgical incision. In all these cases a second caudal needle was inserted and the analgesia continued for the completion of the labor and the delivery. There was no evidence of infection or other complications in these cases.

Since the development of our malleable stainless steel needle through a special annealing process, and since we have advocated the use of these needles in only five labors and deliveries we have had no needle breakage in the last thousand cases of our series. However, in 3 cases in this group the metal collar became detached from the shaft of the needle. It was necessary to withdraw the needles and reinsert others to continue the procedure.

Through the cooperation of the Becton, Dickinson Research Department we have improved our needle to such a point that the possibility of breaking of the shaft or disjunction at the collar is now a remote possibility indeed. Nevertheless, other cases of needle breakage have been reported to us in which the malleable needle was used more than eight times. Likewise it has been reported to us that ureteral catheters have been broken within the canal.

This complication in the future will be minimized only by the employment of standard recommended equipment and proper technic, including the conduction of most of labor with the patient at rest on her side.

Infection—In our series of 1,150 cases we have had one death⁴ from a peridural infection at the level of the fifth lumbar and first sacral segment from which a pure culture of staphylococcus was isolated post mortem. This was the identical organism that was found in the blood cultures of the patient several days before death. Death occurred on the thirty-first hospital day, and the case has been reported in detail. We have had in addition three minor infections of the sacral and gluteal area with cellulitis and abscess formation. All of these cases cleared up under sulfonamide therapy and incision and drainage. In 1 of the cases great benefit was derived from a single treatment with x-rays.

From the 10,000 cases reported to us there were no other deaths from infection. However, there were 3 instances of peridural infection from three different clinics. All cleared up under sulfonamide therapy.

Diagnosis of peridural abscess following continuous caudal analgesia is not always an easy procedure. The

attending physician should suspect this condition in instances of unexplained fever and morbidity lasting over a period of several days. From our study of this complication we believe the following measures should be instituted in all cases of infection in the peridural space following continuous caudal analgesia.

1 A repeat caudal insertion should be made with an 18 gage stiff needle in an attempt to aspirate pyogenic exudate.

2 Forty cc of saline solution containing 75,000 units of penicillin should be injected into this space through the caudal canal on at least two occasions two hours apart.

3 In event this does not completely control the case, a surgical incision should be made over the dorsum of the sacrum and a soft rubber tube drain inserted through the first or second posterior sacral foramen. A caudal needle should be inserted and a lavage with 5 per cent sulfathiazole should be performed every hour for twelve hours.

4 Sulfathiazole or sulfanilamide in adequate doses by mouth should be instituted in cases of incomplete relief with penicillin and in cases in which penicillin is not available.

Unilateral Analgesia—This condition occurs in 5 per cent of the cases managed by the needle technic of continuous caudal analgesia in which the patient remains on her side.

The dependent side is usually the one in which the patient has complete relief, and this may be explained by the gravitation of the analgesic solution through the foramina along the nerve trunks on this side. The following measures may be instituted to relieve this complaint.

1 A subsequent injection of an additional 20 to 30 cc of the solution may be given and the patient turned to the opposite side immediately thereafter.

2 In some instances rotation of the needle within the canal toward the side on which the patient complains of pain will more accurately distribute the metycaine in the area where it is needed. This condition has also been reported by those who have used the catheter technic.

Bladder Dysfunction—Thus far in our series the prolonged use of continuous caudal analgesia with 1.5 per cent metycaine has not increased the incidence of postpartum catheterization. Forty patients in our series of 1,000 have had to be catheterized more than twice during the postpartum period. Only 3 in our series of 1,150 patients have had bladder dysfunction for a period longer than one week. One patient still has retention of urine after three weeks. The care of the bladder during labor has been discussed under the heading of obstetric management. It should be emphasized that at no time should the bladder be permitted to become overdistended during the labor and always, before delivery, catheterization is performed. Nevertheless, from the 10,000 cases reported to us there have been those in which there was temporary bladder paralysis for several days post partum. In another series from a university, this complaint was present in 20 per cent of 40 cases in which metycaine has been used in distilled water. Experiments performed by us have proved that metycaine in distilled water produces a hemolysis of red blood cells.

We believe that the products of hemolyzed red blood cells in this space together with the use of hypotonic solution in long contact with nerve trunks might produce a neuritis of some of them associated with bladder dysfunction.

Backache—This complication was prevalent in about 20 per cent of our first hundred patients, who spent all of their time in labor on their backs. Since we believe that the relaxation of the lower lumbar muscles under

⁴ Edwards W B and Hingson R A. The Present Status of Continuous Caudal Analgesia in Obstetrics. Bull New York Acad. Med 20: 507 1943.

continuous caudal block produces an obliteration of the lumbodorsal curves or the "strut" of pregnancy with undesirable rapidity, we insist that our patients lie on their sides and have insisted that they remain on one or the other side throughout labor. They may be turned on their backs and delivered in the usual manner.

Since we have adopted this regimen the incidence of backaches during labor has diminished. About 5 per cent of our patients complain of some backache, and a few of these also have an associated pain in the neck incident to subsequent injections. These pains are transient and rapidly disappear as the analgesia becomes more intense.

slightest change in her pulse and blood pressure. Subsequently the needle was rotated and the continuous caudal analgesia was continued to a successful completion with the delivery of a vigorous baby which breathed spontaneously. The second patient had 3 Gm of 6 per cent metycaine in 50 cc of solution injected by mistake at a single dose. The patient developed disorientation, complete motor and sensory nerve block to the nipples, and a severe convulsion which was controlled with an intravenous barbiturate. She remained in this state of complete analgesia below the nipples for a period of six hours. The baby was delivered with outlet forceps without pain to the mother, and the baby breathed

TABLE 2—Comparison of Analgesic Efficiency of Drugs Used

Name and Concentration of Drug	Effectiveness of Pain Relief	Effect on Blood Pressure	Duration of Analgesia with 30 Cc. Solution	Disadvantages as Determined by Reactions and Complications
METYLCAINE 1.5 per cent in isotonic solution of sodium chloride or isotonic solution of three chlorides	Profound 100 per cent pain relief, rapid in onset with complete relief often in five minutes	Blood pressure fall exceeding 20 mm. in 85 per cent of 10,000 cases satisfactorily treated with ephedrine	30 minutes to 2 hours with average of 50 minutes	1 Slight increase in incidence of nausea 2 Increased bladder atony for 48 hours (reported to us but observed by us in only 1 case)
<chem>CC1(CCN(C1)C(=O)OCC2=CC=CC=C2)OCC3=CC=CC=C3</chem>				
PROCAINE 1.5 and 2 per cent in isotonic solution of sodium chloride	Profound 90 to 100 per cent pain relief, occasional cases not relieved with procaine would respond to metycaine	Incidence of blood pressure fall approximately the same as with metycaine, usually prevented with addition of 1:200,000 epinephrine	30 minutes to 2 hours with average of 40 minutes	1 Slight increase in incidence of nausea 2 Increased mental excitement
<chem>CC1(CCN(C1)C(=O)OCC2=CC=CC=C2)N</chem>				
PONTOCAINE 0.25 per cent and 0.2 per cent with 1:2,000,000 epinephrine in isotonic solution of sodium chloride	Generally satisfactory, but patients still complained of slight discomfort 80 to 90 per cent effective, slow in onset	Blood pressure fall when used with epinephrine not so constant as with metycaine	1 to 5 hours average 70 minutes	1 Incidence of nausea definitely increased 2 Postdelivery complaints as regards hypalgesia and hypesthesia more constant
<chem>CC1(CCN(C1)C(=O)OCC2=CC=CC=C2)N</chem>				
MONOCAINE 0.75 and 1 per cent in isotonic solution of sodium chloride	90 to 100 per cent effective	Blood pressure fall similar to metycaine when used without epinephrine and ephedrine	30 minutes to 1 hour and 40 minutes, average 40 minutes	1 Nausea increased

Dermatitis—Thus far we have had only 2 cases of dermatitis in our series which we have attributed to metycaine. These were typical erythema multiforme lesions which cleared up spontaneously in two days. The subjective symptoms of itching were treated with calamine lotion and 1 per cent phenol. In both instances the rash developed within twelve hours after delivery in patients who had been under continuous caudal analgesia for more than six hours.

Convulsions—In our series there have been only 2 instances of convulsions. One patient had had 3 cc injected unintentionally into the blood vessel. She complained of tasting the drug within ten seconds and had a mild clonic convulsion with complete disorientation within twenty seconds. This condition cleared up spontaneously within a minute and a half without the

spontaneously. Neurologic examinations of the mother at the end of seven days, two weeks and six weeks after delivery revealed no residual complications which could be attributed to the analgesic agent used.

Headache—The headaches which have occurred in our series have been transient in duration. All of them occurred in cases in which the solution was being injected more rapidly in an attempt to gain a higher level of analgesia. It was determined that these headaches could be diminished or completely arrested if subsequent injections were made more slowly.

Vomiting—Nausea and vomiting one or more times during the course of labor and delivery occurred in 20 per cent of our patients. Since many patients under all forms of sedation and without sedation in labor have a tendency to vomit with complete dilatation of the

cervix we do not believe that this 20 per cent incidence in our series could be ascribed entirely to the drug used.

A few of our patients complained of nausea with each uterine cramp before the induction of the analgesia. After the analgesia was instituted the nausea ceased and the patients were able to retain their fluids and some servings of nutritious meals.

Several other patients became nauseated and vomited as the analgesia was near the end of its effective nerve block period.

Therefore we have concluded that nausea and vomiting during labor and delivery are in some way associated with the intensity of the pain and distress which the patient experiences. It appears that the pylorus will not function during a painful labor.

The relief of pain and anxiety will often diminish the instances of nausea. However in 5 per cent of our cases there has been accentuated nausea and vomiting coincidental with subsequent injections of metyramine solution. These we ascribe to the toxic action of the drug on the maternal organism.

Jaundice—We have had no instances of jaundice in the mother at any time during the postpartum period even though some of our patients have had impaired liver function and some of them were known to be eclamptic.

Hypesthesia, Hysteria and Bizarre Reactions—The complaint of hypesthesia includes complaints of unpleasant subjective numbness, dizziness, tinnitus, spots before the eyes, increased nervous irritability and residual postdelivery disturbances in sensation over the extremities, perineum or abdomen.

We have had only 2 patients complain of a postpartum hypesthesia. One of these patients complained that the numbness extended over both arms, the trunk and both legs. After a careful checkup by our neurologist, who found no objective evidence of this complaint, the patient declared that she felt much better and that her sensation returned completely by the third week post partum. Another patient has complained of a hypesthesia of the vaginal vault and rectal area since delivery of a baby three months ago.

A 15 year old Negro developed total hysteria which extended from her soles to her scalp on both sides a few minutes after the initial injection. She remained in the vegetable state for a period of one hour. A few whiffs of ammonia brought her back to the state of reality a few minutes later. In this case we purposely let the metyramine wear off and let her have one hour of strong uterine pains. After this chastisement she requested more metyramine and from then on her analgesia worked perfectly.

Drop in Blood Pressure—Patients under continuous caudal analgesia not only have a block of the nerve pathways transmitting uterine pain from the eleventh and twelfth thoracic sympathetic segments but also have a block of the upper lumbar sympathetic ganglions which produces a vasomotor dilatation of the blood vessels of the pelvic viscera and the lower extremities. This produces an increase in the volume of the vascular bed in much the same manner as would be experienced from a bilateral lumbar sympathectomy. Therefore in the hypertensive patients a definite fall in blood pressure is usual. This sometimes exceeds 80 to 100 mm of mercury in both systolic and diastolic pressure. In individuals with normal blood pressure this fall is never so pronounced. In 80 per cent of our cases there was no blood pressure fall at all throughout either

the labor or the delivery. In 20 per cent in our personal series of 1,150 cases and in 27 per cent of the reported series of 10,000 cases there was a blood pressure drop greater than 20 mm of mercury.

Some of the physicians who have used this procedure have put a vasopressor substance in the solution. In some instances this has been 1/20,000 epinephrine and in other instances it has been 1/5,000 ephedrine sulfate or 25 mg of ephedrine to 125 cc of this solution. It has been our recent practice to use no vasopressor substance unless the blood pressure should fall below 90 mm of mercury systolic. In these instances it is our practice to use 25 mg of ephedrine at this time either intravenously or intramuscularly, depending on the need of the patient. In such a case either 25 mg of ephedrine or 10 minims of 1/1,000 epinephrine should be added to each 125 cc of the metyramine solution subsequently used to maintain the analgesia.

We have seen blood pressure falls with all of the recognized cocaine derivatives and cocaine substitutes for this procedure. We believe that the blood pressure fall may be attributed to the pharmacologic action of the drug with its associated vasomotor dilatation of the blood vessels of the lower extremities and splanchnic reservoirs rather than any toxicologic effect.

Contraindications—1 Infection over the site of the area to be injected. (a) furunculosis (b) carbuncle or abscess over the area, (c) infected pilonidal cyst (d) pyoderma (e) fungous or Tinea versicolor infection.

2 (a) Anatomic anomalies of the sacrum or bony obliteration of the sacral hiatus. (This is a very rare condition which occurs less than once in 200 cases.) This condition will be found more frequently in the early part of the obstetricians' series.

(b) A low lying dura mater in which spinal fluid may be aspirated through the caudal needle. This is an absolute contraindication. The case should be termed unsuited for caudal analgesia and should be managed in some other manner.

(c) Gross deformities of the spinal column such as Pott's disease, scoliosis or exaggerated lordosis.

(d) Patients with sacra having no bony dorsal arches.

3 Patients with a history of sensitivity to one of the cocaine derivatives or substitutes.

4 Patients with advanced anemia unless the procedure is to be supplemented with the periodic or continuous administration of a high concentration of oxygen. These persons should be given a transfusion of whole blood if the anemia has reached a critical stage.

5 The psychically unsuited. (a) patients with a history of hysteria or vasomotor instability (b) epileptiform seizure, (c) central nervous system disease or (d) persons who have had meningitis or encephalitis.

6 Cases of placenta previa, unless cesarean section under this form of analgesia is contemplated immediately after its institution. The cervix and lower uterine segment in these cases will become very much softened, thereby increasing the possibility of hemorrhage.

7 Cases of bony disproportion between the pelvis and the presenting part of the fetus, unless cesarean section under this analgesia is anticipated.

8 Extremely obese persons in whom the sacral hiatus cannot be palpated. It should be emphasized

that blind prodding with a needle by the untrained physician will certainly result in disaster

Of one hundred physicians who were given intensive postgraduate instruction in the technic of continuous caudal analgesia, ten of them stuck the needle to the side of or below the coccyx and into the rectum or pararectal tissues. One of these physicians inserted the needle through both walls of the rectum, the vagina and one lip of the cervix. Fortunately, the fact that the needle was malleable caused it to deflect away from the parietal bone of the baby.

It has been reported to us that a fatal injection of metycaine was performed with a stiff needle into the cranial vault of the baby.

It is unwise to attempt insertion of the needle more than three times in any case. Multiple punctures should not be made and if continuous caudal analgesia cannot be performed by an expert immediately with a minimum amount of physical and psychologic trauma to the patient, other forms of sedation should be used.

We are convinced that continuous caudal analgesia will give complete relief of pain to the parturient with absolute safety to her and her baby, provided the procedure is supervised by a specially trained person. We have found that the ideal person for this responsibility is an obstetrician who has been fundamentally trained in the specialized form of anesthesiology. We have also observed that in some instances the specially trained obstetrician's nurse is able to make some of the subsequent injections and to determine the progress of the parturient with absolute safety. However, the obstetrician in charge of the case should be in absolute control of the management of the procedure and should be available for consultation immediately if the patient should need him.

SUMMARY

From our experience and the accumulated experience of others we believe that the following postulates should be emphasized by all obstetricians who use this method:

1 The incidence of operative obstetrics is increased. No physician should use continuous caudal analgesia unless he is well trained in the use of forceps.

2 The incidence of posterior positions is increased to about 8 per cent because of the relaxation of the levator muscles with the resultant failure of a large number of the fetuses to rotate spontaneously.

3 The incidence of transverse arrest in the mid-pelvis is slightly increased because of the failure of the patient to use her auxiliary expulsive forces.

4 In the hands of the experienced, to offset the first three disadvantages, all types of operative obstetrics are facilitated because of the relaxation of the cervix, lower uterine segment and perineum. This relaxed state is not achieved by any other form of general anesthesia.

5 No oxytocic drug should be given until after the termination of the third stage of labor, because the uterus in every instance after continuous caudal analgesia contracts firmly with the delivery of the baby. Hemorrhage during the third stage is therefore definitely minimized. Gentle constant pressure on the fundus of the uterus as the placenta separates will usually expel it within two to five minutes after delivery. When oxytocic drugs are given immediately after the birth of the baby, the incidence of trapped placentas is increased.

6 Continuous caudal analgesia should be started only after labor is definitely established and the patient is in need of relief from pain.

(a) The head must be engaged (unless for cesarean section).

(b) The contractions should be occurring at five minute intervals or less.

(c) There should not be any disproportion between the presenting part and the pelvis.

(d) Progressive dilatation of the cervix 3 cm or more should be in progress.

7 The babies born under continuous caudal analgesia are just as alert and wide awake at birth as those born to mothers who had no form of sedation or anesthesia. Many of them cry before their shoulders are born. Therefore every attempt should be made to shield the mouth and nose of these babies from aspirating fluid and mucus as their noses cross the perineum.

8 The incidence of fetal mortality and morbidity may be expected to decrease considerably, since there is apparently less birth shock to them by this than by any other method.

9 The entire course of labor is altered⁵ from the pictures described in textbooks under other forms of management. The first stage of labor is definitely shortened, the third stage is shortened and simplified. However, the terminal part of the second stage of labor is greatly prolonged unless outlet forceps are used on complete dilatation of the cervix and descent of the presenting part to the perineal floor.

10 An understanding of the anatomy of the peridural space, the sacrum and the surrounding structures is essential. A thorough knowledge of the neurology of the pelvic viscera is a prerequisite. A familiarity with the pharmacology of the cocaine derivatives and substitutes used in this method is necessary. The proper interpretation of the physiology of labor as altered by continuous caudal analgesia must be studied diligently.

11 For success with continuous caudal analgesia, knowledge of the related principles of the basic sciences must be combined with a high degree of obstetric competence and a skilful application of this new technic in anesthesiology.

807 Spruce Street.

5 Siever, J. M., and Mousel, L. H. Continuous Caudal Anesthesia in Three Hundred Unselected Obstetric Cases, *J. A. M. A.* 122: 424 (June 12) 1943.

Discovery of Radium—The discovery of radium was an indirect result of the discovery of roentgen rays. In the early roentgen ray tubes the impact of the cathode rays on the glass wall of the tube produced a green fluorescence. This phenomenon suggested that there might be some relationship between visible fluorescence and invisible roentgen radiation. Jules Henri Poincaré, a physicist at the University of Paris, was the first to suggest the desirability of testing ordinary fluorescent or phosphorescent substances to see if they emitted invisible rays similar to roentgen rays. His colleague Henri Becquerel undertook a systematic investigation of these substances. They were placed on a photographic plate, which was wrapped in black paper and put aside for some hours. His results were all negative until he tested several uranium salts in this manner. With all of them a distinct photographic effect was obtained. On Feb. 24, 1896 Becquerel reported his discovery at the Academy of Sciences—Haagensen, C. D., and Lloyd, Wyndham E. B. *A Hundred Years of Medicine*, New York, Sheridan House, Inc., 1943.

Clinical Notes, Suggestions and New Instruments

LABORATORY IDENTIFICATION OF SULFONAMIDE RESISTANT GONOCOCCIC INFECTIONS

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Sulfonamide resistance is an important factor in the therapy of gonorrhea and constitutes a formidable barrier in the present campaign for the complete eradication of this disease. An analysis by Cox¹ of over 700 cases of gonorrheal urethritis in the male treated with sulfathiazole, sulfadiazine and sulfamerazine² shows that 70 per cent of the cases are clinically and bacteriologically negative within five days and that the remaining 30 per cent show varying degrees of resistance. The principal manifestations of sulfonamide resistance are (1) persistence of symptoms and positive cultures for from several days to many months and (2) persistence of positive cultures in asymptomatic carriers. The latter group particularly constitute a serious public health menace.

Evidence has been reported showing that factors within the invading gonococcus determine sulfonamide resistance more than constitutional factors within the host provided drainage is adequate and that proper therapeutic measures have been taken. The Bangs,³ Cohn Steer and Seijo⁴ and Lankford Scott and Cooke⁵ have studied the growth of gonococcus strains in the presence of sulfonamides by various methods in the laboratory. All these investigators report that in general the strains from resistant cases of gonorrhea tolerate a much higher concentration of drug outside the body than strains from responsive cases.

The aim of the work reported here was primarily to confirm the correlation of clinical and in vitro response to sulfonamides by an independent method. Since the results in a series of 32 cases gave a complete correlation the method was then modified for the purpose of providing a simple and rapid laboratory test for the typing of cases of gonorrhea into sulfonamide responsive and sulfonamide resistant types. The test is simple enough to be carried out readily in any clinical laboratory, it can be completed in two to four days after the first examination of the patient and finally it makes possible the prediction of the results of therapy. Most of the 32 original cases and 26 additional cases were then studied by means of the simplified test and a high degree of correlation was obtained. The original method which was developed by two of us (W. G. and L. S.), gave a quantitative index of the sulfonamide resistance of each strain. It will be described in detail elsewhere and the strains studied by this method are reported here merely as sulfonamide resistant, responsive or partially resistant.

METHOD

Pure cultures of gonococci are obtained in the usual way prior to therapy, using either the starch casein hydrolysate meat

infusion medium of Mueller and Hinton⁶ or chocolate-agar. From this pure culture small inoculums are streaked on a control plate of the Mueller-Hinton medium and on a series of three plates of the same medium containing sulfathiazole concentrations of 0.10, 0.25 and 0.50 mg per hundred cubic centimeters of medium respectively.

The medium is prepared as described by Mueller and Hinton and 0.1 cc, 0.25 cc, and 0.50 cc of a 0.1 per cent solution of sulfathiazole added to 100 cc portions of the medium just before autoclaving. This medium should not be autoclaved for more than ten minutes at 10 pounds. The sulfathiazole solution is prepared by suspending 1 Gm of sulfathiazole in 10 to 20 cc of water adding sodium hydroxide solution until a clear solution is obtained (4 to 5 cc of first normal) and then diluting to 1000 cc. Best results are obtained with plates less than 2 to 3 weeks old.

It is important to use an approximately standard amount of inoculum on each plate. The main source of error is the use of too large an inoculum, since this may protect susceptible strains against the action of the drug.

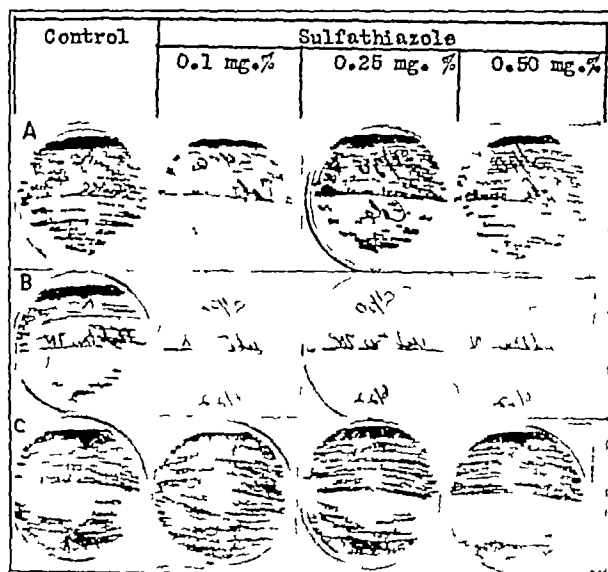


Fig. 1—Simplified test with pure cultures. A shows a resistant strain and B a responsive strain. C shows another resistant strain (upper half of each plate) and D a partially resistant strain (lower half of each plate).

The plates are then incubated at 36 to 37 C in a candle jar for eighteen to thirty-six hours and read as follows:

1 Equally or almost equally good growth on all the plates indicates a resistant strain.

2 Good growth on the control and no growth, or only traces of growth on the sulfathiazole plates indicates a susceptible strain.

3 Good growth on the control and intermediate degrees of growth on the sulfathiazole plates, with considerably better growth on the 0.1 mg per hundred cubic centimeters plate than on the 0.50 mg per hundred cubic centimeters plate indicates a partially resistant strain.

It has been found advantageous to spray the plates with a solution of the oxidase reagent (para-amino dimethyl aniline hydrochloride) to identify the colonies as *Neisseria*. Occasionally contaminants resistant to sulfathiazole and closely resembling gonococcus colonies in appearance have been encountered but they are readily distinguished from gonococci by the use of oxidase reagent.

Photographs of plates treated in this way are given in figure 1 and show typical examples of the three types of strains. *Neisseria* colonies appearing black.

6 Mueller J. H. and Hinton J. A Protein Free Medium for Primary Isolation of the Gonococcus and Meningococcus. *Proc. Soc. Exper. Biol. & Med.* 48: 330 (Oct) 1941.

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From the Department of Bacteriology and Immunology, Harvard Medical School and School of Public Health.

Constant advice and encouragement were given by Dr. Oscar F. Cox, head of the genitourinary clinic at the Boston Dispensary, and by Dr. J. Howard Mueller, professor of bacteriology and immunology, Harvard Medical School.

1 Cox O. F. Chemotherapy in Gonococcal Infections. *New England J. Med.* 220: 184 (Jan 29) 1942.

2 As sulfonamide is well known to be less effective than other sulfonamides against the gonococcus, it has not been used in the present study and the term sulfonamide is here restricted to the three drugs mentioned.

3 Bang Frederick and Bang Betsy. Sulfonamide Sulfapyridine and Sulfathiazole Therapy of Gonococcal Infections of the Chorioallantoic Membrane. *Proc. Soc. Exper. Biol. & Med.* 48: 527 (April) 1941.

4 Cohn Alfred Steer Arthur and Seijo Irma. Correlation Between Clinical and In Vitro Reactions of Gonococcus Strains to Sulfathiazole. *Am. J. Med. Sc.* 203: 276 (Feb) 1942. Cohn Alfred and Seijo Irma. Further Observations on the Correlation Between Clinical and In Vitro Reactions of Gonococcus Strains to Sulfathiazole. *Am. J. Syph. Gonorr. & Ven. Dis.* 27: 301 (May) 1943.

5 Lankford O. E., Scott Virginia and Cooke W. R. Studies of Sulfonamide Resistance of the Gonococcus. *J. Bact.* 45: 201 (Feb) 1943.

Endameba histolytica infection was made. Emetine was prescribed, but he could not tolerate the drug so the medication was changed to acetarsone. His condition improved after the administration of this drug, and normal bowel habits were established for a brief interval. The dysenteric condition recurred but was again controlled by the administration of another course of acetarsone. Subsequent exacerbations were handled in this manner and the patient would remain symptom free for periods varying from three to four weeks.

At the time of his entrance to this clinic his complaints were frequency of bowel movements (three or four per day), soreness and cramping of the lower part of the abdomen. His diarrhea had no relation to meals or to different types of food. The physical examination revealed numerous caries in his teeth, the tongue was coated, the breath was fetid (of a peculiar odor which was noted to be similar to that coming from the bowel on sigmoidoscopic examination), the left arm and the right leg were spastic, speech was slurring. There was tenderness on deep palpation over the right lower quadrant of the abdomen.

Proctosigmoidoscopy revealed a diffuse inflammation of the rectal mucosa. In the upper third of the rectum were several irregularly shaped diphtheritic patches varying from 1.5 to 3 cm in length and 0.5 to 1.5 cm in width. There were also numerous small, round white plaques, these had the appearance of bacterial colonies, as they are seen growing on an agar plate. The plaques were easily wiped off and exposed a raw, hyperemic area from which blood exuded. Scrapings from these areas when examined microscopically, on a warm stage, revealed the vegetative forms of *Balantidium coli*. Photomicrographs were prepared of the stained specimens (figs. 1, 2 and 3).

A low residue, high vitamin, high caloric diet was ordered and carbarsone was prescribed, one tablet (0.25 Gm) to be taken twice daily for ten days. When the patient was seen two weeks later he stated that he no longer had a diarrhea. Proctoscopy revealed only a slight hyperemia of the mucosa, the white patches had entirely disappeared. There remained

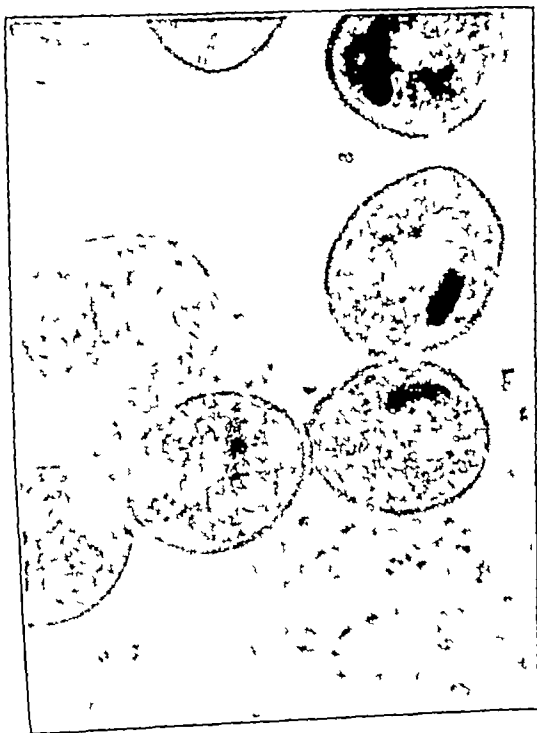


Fig. 2—High power view of the same material as in figure 1, showing greater detail of the internal structure of *Balantidium coli*.

only light areas corresponding in size to the plaques and having the appearances of superficial scars. Fourteen days after the carbarsone was stopped the patient stated that he did not feel well and that he was again having frequent bowel movements. Proctoscopy showed a diffuse inflammation of the mucosa which was partially covered with a white foamy exudate. Smears taken at this time contained an abundance of very active balantidia. Another course of carbarsone was prescribed, the same results as those recorded were observed

Since oil of chenopodium has been used with good results by some authors,⁴ the following treatment was employed. The bowel was flushed with a weak solution of sodium bicarbonate and this was followed by 4 cc of oil of chenopodium in 30 cc. of olive oil. The solution was instilled in the rectum by means of a small catheter and was retained for two hours. This treatment was again repeated in three days. Examination of

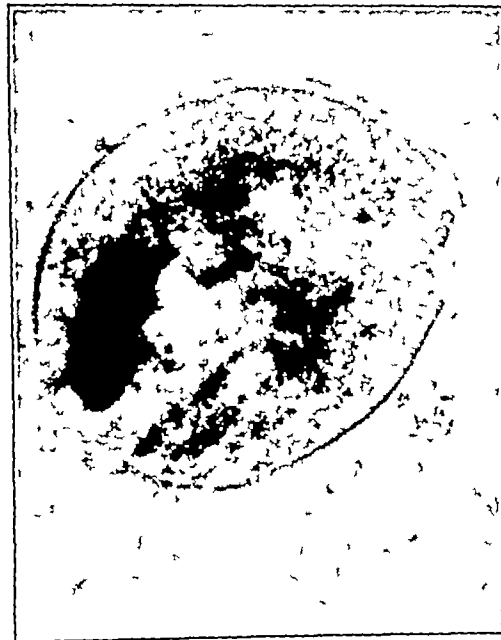


Fig. 3—Oil immersion view of *Balantidium coli* showing clear cytotome, macronucleus, food vacuoles and surrounding granular debris.

the patient seven and fourteen days later showed that there was no improvement, however, when the amount of oil of chenopodium was doubled the mucosa appeared normal after only one week had elapsed. The patient remained free from symptoms for one month, therefore he was instructed to return to the clinic in six or eight weeks for a check-up. When he returned he again was having frequent bowel movements.

Proctoscopy revealed the same picture that was seen at the time of his first visit to the clinic.

Diodoquin tablets (Searle) were prescribed, ten tablets of 0.25 Gm size daily for twenty days. When the patient returned at intervals of one, two, four, six and eight weeks he stated that his bowel movements were regular and that the stools were well formed. He was instructed to return in six months for another examination, provided there was not a recurrence of symptoms at an earlier date. The rectal mucosa appeared normal and *Balantidium coli* could not be demonstrated when he was next examined. The patient is feeling well and has gained considerable weight.

Eighteen months have elapsed since the administration of the diodoquin and there has been no return of symptoms or other evidence of the disease. The arsenicals and oil of chenopodium were of little value in the treatment of this case.

Fourteenth and Davenport streets

⁴ Mason, C. W. Personal communication to the authors. Cort E. C. Infection with *Balantidium coli*, J. A. M. A. 90: 1430-1431 (May 5) 1928.

Whooping Cough—Of all the infectious diseases of childhood that occur in epidemic form, perhaps none is more important from the point of view of both morbidity and mortality than is whooping cough. The disease occurs both endemically and in epidemics and is most serious when complicated by secondary pulmonary infections, these are produced as a rule by those organisms that commonly inhabit the upper respiratory tract. When uncomplicated by secondary infection, whooping cough is rarely fatal, when death does occur it is more or less accidental and usually is due to suffocation accompanying convulsive seizures or to hemorrhage within the cranial cavity incident to the violent spasms of cough which characterize the disease.—Forbus, Wiley D. Reaction to Injury, Baltimore, Williams and Wilkins Company, 1943.

Special Article

AMERICAN HEALTH RESORTS

CLIMATE AND DISEASE

C A MILLS, M D

CINCINNATI

These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.

Certain fundamental principles of climatic effects should be kept constantly in mind when spa therapy is being considered. In many types of disease the climatic background of a spa will exercise a considerable influence over its possible benefits to the patient. Facts showing just how and why this is true have not been sufficiently appreciated by the medical profession, hence this article, setting forth the pertinent information available.

Climate is now beginning to receive the attention its importance warrants. Through its dominance of ease of body heat loss it largely determines the energy level on which man may exist in a given region, and we now know that much more than mere working ability is attached to this energy level of existence. All vital functions of the body are based on the energy derived from cellular combustion of foodstuffs, but as an energy conversion machine the body is not of high efficiency. It is thus very sensitive to the ease with which its waste heat can be thrown off, and it is here that climatic dominance is exercised. Where heat loss is accomplished easily, growth is most rapid, maturity comes early, resistance to infection is highest, energy for thought and action is most plentiful, and health assumes a positive and dynamic quality. As heat loss becomes more difficult, all these indexes of vitality are depressed and a lower, more vegetative level of existence results.

Physicians, particularly in the intense climatic contrasts of America, should have a clear understanding of these forces at work. Enlightened practice now goes far beyond the mere diagnosis and treatment of disease. Underlying most research into the treatment of disease has been the ideal of disease prevention—the maintenance of unhindered health. Among the factors influencing this maintenance of health, climatic environment probably will be found as important as adequate food supply or genetic background. Proper food is, of course, an essential requirement, but so too is the ability to utilize this food. With the lower combustion level of people in tropical warmth, more vitamins are needed to utilize each gram of food than are required for optimal response in cooler climates. Man is less energetic in warm climates, but he is a more efficient working machine and shows less evidence of bodily and mental stress. In cooler regions, where more dynamic and buoyant health prevails, the most acute and worrisome problems facing the medical profession arise from the wear and tear of too strenuous an existence.

While mean temperature level and ease of body heat loss thus dominate the energetics of life there is a second climatic factor which in some regions seriously disturbs the smooth flow of healthful functioning.

Storminess or atmospheric turbulence, with the accompanying sudden changes in temperature, pressure and humidity, is now recognized as a major disturbing factor in certain regions of the earth where cyclonic storms prevail. These sudden changes in the atmosphere seriously disrupt tissue functioning in ways as yet little understood and seem closely related to the initiation of many types of acute infectious attacks. Storm changes certainly constitute a major health factor in regions where they are frequent and abrupt, but much more evidence must be accumulated before the physiology of their effects can be clearly understood. Physicians should realize that individuals differ greatly in their sensitiveness to storm changes. Some people are utterly unfitted for existence in a stormy region and should be advised of the advantages of migration to a region of lesser turbulence.

This article is offered in the hope that it may help physicians to a clearer understanding of the workings of these climatic factors. Knowledge in this field still is in the stage of rapid expansion, but sufficient information already is at hand to warrant positive advice along several lines. The newness of much of this knowledge necessitates for its clear understanding, a rather comprehensive presentation of the physiologic principles involved.

PHYSIOLOGIC CONSIDERATIONS OF CLIMATIC EFFECTS

Human Energetics—The most fundamental effects of climate are exerted on the energetics of human existence so let us first consider the body as an energy conversion machine. At all times it lives and functions only by virtue of the cellular combustion of foodstuffs. Much of this combustion energy is wasted, however, because of low working efficiency. Man himself has designed a machine of greater working efficiency than the human body. As high as 37 per cent efficiency has been reached in Diesel engines, while even gasoline motors reach the 20-25 per cent efficiency exhibited by man, the horse and dogs. The human body, however, is much more limited than are inanimate motors in the temperature range within which it can function well. Even a very few degrees of rise or fall from the normal level seriously interferes with efficient functioning.

To meet this handicap the body has developed an intricate mechanism for regulation of heat loss. Through the vasomotor control of blood supply to the skin the amount of heat reaching the body surface for dissipation can be altered with great rapidity. Normal loss from the deeper tissues by direct conduction is slow and is impeded by the insulating layers of fat encountered but the blood with its high specific heat capacity and speedy circulation can carry internal heat to the body surface at a rapid rate. Blood flow through skin capillaries may be increased as much as thirtyfold within a few minutes when a sudden need arises. When this increased flow through the skin proves inadequate for quick elimination of the heat of combustion the sweat glands become active and make possible a still greater increase in rate of heat loss by water vaporization.

This intricate heat control mechanism functions quickly to meet sudden changes in heat production (as in bodily activity) or in the ease of heat loss (as with sudden external temperature changes). With more prolonged changes in the ease or difficulty of heat loss, however, the body adapts by an increase or decrease in its own basic rate of tissue combustion. Thus external heat that lasts only a few days calls into play only

the vasomotor and sweating mechanisms, but if such heat persists for ten days to two weeks there occurs a definite suppression in tissue combustion rate. Therein lies the chief reason why severe summer heat waves may persist for weeks but cause prostration and death in the affected population only during the first ten days.

It is this combustion rate response to the more prolonged changes in external temperature level and ease of body heat loss which holds greatest significance for man. Any decrease in total tissue combustion, enforced by difficulty in heat loss necessarily means a curtailment of energy available for carrying out such vital functions as growth, work performance, tissue repair and the fight against infectious invasions. Such direct linking of these vital functions to tissue combustion rate and ease of body heat loss, although logical enough, has not received the appreciation its importance warrants. Indeed there has existed among medical men in America a disbelief that any such dependence really exists. This disbelief dates back to the publication of a paper by Benedict and Cathcart¹ in which they cite oxygen consumption data on 14 subjects in Boston and claim a lack of any seasonal influence. Even though their own data show a strong tendency for lowest oxygen consumption to occur in July or August and this in Boston where summer heat is rarely severe, this article has been extensively quoted as indicating that tissue combustion rates are independent of external temperature levels.

This point is of such basic importance in any analysis of climatic effects that recently it was made the subject of a special article in which the available evidence was presented and discussed. As set forth in that article the evidence points conclusively to a clear inverse relationship between tissue combustion rates and prevailing external temperature levels in both men and animals (within physiologic limits). Practically all investigators who have looked for this heat suppression of combustion rate have found it. Let us next see what it means in terms of growth and other vital functions.

Growth—All types of experimental animals suffer a growth retardation when heat loss becomes difficult. This happens even though all factors of existence other than ease of heat loss are kept constant. Animals at 91 F eat only about two thirds as much food as at 65 F. Herein lies the principal reason why domestic animals do so poorly in tropical warmth, giving lean, stringy meat of strong flavor. Coarseness of the tropical forage crops and leaching of soils under the heavy rainfall may be factors of considerable weight, but suppression of tissue combustion by difficulty in body heat loss is probably more important.

Children show this same retarded growth and inferior adult size under tropical heat conditions while in the optimal coolness of middle temperate regions growth is most lusty and adult stature greatest. The close relation of such growth differences to oxygen utilization is emphasized by the pronounced differences in vital lung capacity exhibited by individuals from the two types of climate. Vital capacity in Filipino college students is only a little over half as great as that of students in the northern part of the United States.

Sexual Functions—Onset of sexual functions and degree of fertility are closely linked to ease of body

heat loss and tissue combustion level. Most rapid development and highest fertility occur at environmental temperatures around 65 F. As difficulty in heat loss comes on and growth rate slackens, we regularly see also a later onset of sexual cycles in young females both human and animal, and lowered fertility. Animals mate freely at 90 F, but conceptions are difficult to obtain and result in small litters of puny young while at 65 F almost every mating results in a large litter of lusty offspring. Microscopic changes in gonadal tissues indicate that this suppression of reproductive tissue is extensive and very real. Spermatogenic activity in the testes is almost obliterated within ten to fourteen days of application of tropical moist heat. After several weeks of adaptation some recovery of function occurs but to a much lower level of activity than is seen at lower temperature levels.

Man, living under natural climatic habitats, shows just as striking sexual variations at different levels of environmental temperature as do laboratory animals. Onset of the menses in girls occurs earliest in middle temperate latitudes and comes at a progressively later age as more and more severe tropical heat is encountered. At the present time here in North America the earliest menarche is found in the upper half of the Mississippi basin. Nowhere else on earth do children grow with such lusty vigor and enter such early adolescence. Development in the Gulf states is somewhat retarded by the long summer of tropical moist heat, but most severe suppression takes place in tropical lowlands, where depressive moist heat renders heat loss difficult at all times.

Medical literature and lay belief back through the centuries, at least to the time of Hippocrates, have held that the earliest onset of the menses occurred in the tropics. Even though all recorded statistics contradict this belief, it is encountered among people of all lands both lay and medical. Since we know it has been handed down through medical literature for two thousand years without factual support, we can well presume that it may have originated several thousand years earlier still. Only twenty thousand or so years ago present middle temperate regions had polar climates and optimal temperature conditions for man were to be found only in what are now tropical or subtropical lands. That such beliefs perhaps once based on real facts, can be handed down through many thousands of years without further supporting factual background is well illustrated by the ancient astrological beliefs so widely held today even among intelligent people.

Wherever human populations are exposed to seasonal swings in mean monthly temperature, highest conception rates nearly always occur when the mean temperature level is near 65 F. As mean temperatures rise above 70 F or fall below 40 F fertility is reduced. With really severe moist warmth as in Japan's monsoon summer heat or in the prolonged severe heat waves in the upper Mississippi valley in North America, conceptions may be reduced as much as 50 per cent. Nor is this reduction in conceptions merely a result of less frequent intercourse in hot weather, for there occurs no significant reduction in the frequenting of houses of prostitution. Apparently both men and animals continue the mating urge in hot weather but suffer a sharp drop in biologic fertility.

Malnutrition from any cause tends to retard development of the sexual functions. Difficulty in body heat loss is no more effective in this respect than is inadequacy of available food supply, either in total amount

1 Benedict, F. G., and Cathcart, E. P. Muscular Work. A Metabolic Study with Special Reference to the Efficiency of the Human Body as a Machine. Pub. 187, Carnegie Institution of Washington, 1913.
2 Mills, C. A. Climate and Metabolic Stress. Am. J. Hyg. Sect. A 20: 147 (May) 1939.

or in composition, or serious childhood illnesses. The menarche usually is delayed in girls who have been subjected to any of these depressive influences during their childhood years.

Resistance to Infection—Although such factors as malnutrition, vitamin deficiency and exhaustion usually have been thought important in determining the body's ability to fight infection, there has been little apparent inclination to consider tissue combustion level. Yet such a relationship would seem logical, since all vitality factors must have their functional basis in the energy liberated from such combustion. It is infectious disease which kills people living under depressing tropical warmth, while the more energetic residents of middle temperate regions die mainly from the degenerative and breakdown ailments. In 1932 we showed that ability to survive tuberculous infection was decidedly higher in Cincinnati residents who were born in the North than in those born in the Gulf states. Dealing only with deaths of tuberculosis among the indigent population of Cincinnati, it was shown that the survival time from first symptom to death was almost twice as long in patients born in the northern part of the United States or North Central Europe as in those born in the Gulf states of North America or in the Mediterranean countries of Europe. Ability to survive attacks of acute appendicitis also is considerably higher in the North than in the South.

Human disease statistics, however, are influenced by too many extraneous factors to be of any great value in determining climatic effects, unless they can be substantiated by studies on experimental animals under carefully controlled conditions. Human data may supply indications of existing differences or trends, but conclusive proof in such a matter must come from laboratory studies. Fortunately such studies³ have now shown that ability to fight infection is definitely higher under conditions that facilitate body heat loss than it is where heat loss is difficult. With all other existence factors except ease of body heat loss held constant, practically all mice adapted to 90 F. will be dead after inoculation with a given dose of pneumococcus organisms before those adapted to 65 F. even begin to succumb. If one uses a less lethal organism, such as a hemolytic streptococcus, the minimum lethal dose for the 65 F. mice is found to be about four times as great as it is for those kept at 90 F. Antibody production after thyroid vaccine injection into rabbits is almost twice as great in animals kept at the lower temperature.

Locke⁴ has provided support also for the idea that the combustion level is an important factor in determining resistance to infection. He found that ability of animals to survive pneumococcus inoculation or of human beings to maintain freedom from respiratory infection was related directly to their rate of oxygen utilization. The matter needs more thorough study, but in the main it would seem that man's susceptibility to infection and his chances for survival are conditioned rather strongly by his ease of body heat loss and the resulting tissue combustion level allowed him. Temperate zone man does not, then, enjoy greatest freedom for respiratory disease during the summer months because of better tissue vitality as has been so commonly supposed. Actually the fatality rate per hundred cases of acute appendicitis is almost twice as high in summer heat as in winter cold, and tuberculosis runs its

most rapid course when symptoms of disease activity first appear in summer heat. It now seems almost certain that the summer freedom from respiratory infection is attributable in very large part to the lessened storminess of that season and the greater freedom from body chilling.

Sensitivity to Heat—In addition to the profound effects on tissue combustion rate and body functions exerted by moderate difficulties in heat dissipation, there are also more acute disturbances brought by excessively high environmental temperatures. Such disturbances are predominantly problems of middle temperate latitudes. This is true for two reasons, both of which are involved in an explanation of the physiology of these excessive heat effects.

The first reason is that man's own internal heat production is highest in temperate regions and his necessity for rapid heat dissipation greatest. Either animals or men adapted for weeks or months to cool surroundings develop a high combustion rate, and this proves embarrassing when sudden difficulty in heat loss is encountered. People residing in tropical moist heat have adapted themselves to a lower rate of heat production, and acute heat effects there are seldom seen except in newcomers from cooler regions. Severe heat waves of summer come on middle temperate populations suddenly and sometimes kill thousands before their body heat production can be brought down within their capacity for dissipation under the difficult conditions suddenly prevailing. Particularly prone to this embarrassment from the sudden heat are the less resilient sclerotic patients and those of limited cardiac capacity. Increased peripheral circulation to facilitate the loss of internal heat throws a greater burden on the heart, and hence the heat wave dangers for those with heart trouble.

Animal and human studies have shown that ten days to two weeks are required for any considerable subsidence of basic internal combustion in response to external heat. Population masses demonstrate this delay in adaptation by being able to stand considerably more severe heat in August than in June or early July. In fact most heat stroke epidemics occur in early July rather than in the hotter weather of August. But if a severe July heat wave was to be inflicted on these same populations at the height of their winter activity, its effects would be truly devastating—perhaps as much as would a North Dakota winter suddenly inflicted on the people of Manila, Singapore or Calcutta. It is, then, the prevailing internal heat production rate of man that largely determines his sensitivity to acute heat effects when faced suddenly with severe external warmth.

The second factor responsible for the greater prevalence of acute heat effects in temperate latitudes is that most severe heat actually occurs there. Dry bulb temperatures of over 100 F. are rare in tropical regions except in desert areas, while temperatures above this level are not unusual during severe summer heat waves as far north as the prairie provinces of Canada. Heat deaths and prostration occur mostly in urban and desert regions and for somewhat similar regions. With the dense vegetation of tropical lowlands, and less so in rural temperate areas, the physical surroundings of man have a high water content. Green foliage is largely water, and the high heat capacity of water enables it to absorb large amounts of radiant heat from the daytime sun with little rise in temperature. Baked earth, desert sands and urban building or paving materials have a very low specific heat and suffer a material rise of

³ Mills, C. A. *Climate in Health and Disease*. Oxford Medicine Series, vol. I, chapter XI, pp. 453-500 (15).
⁴ Locke, Arthur. Lack of Fitness as the Predisposing Factor in Infections of the Type Encountered in Pneumonia and in the Common Cold. *J. Infect. Dis.* 60: 106 (Jan-Feb) 1937.

temperature under the radiant heat load from the sun. In desert regions this daytime heat is quickly reradiated off into space soon after sundown, but in built-up urban areas it tends to be trapped within buildings and to cause progressively higher temperatures as the heat wave persists day after day. Building construction in tropical cities takes account of this danger and provides for ample air currents to carry away any such daytime heat that gains access, but in temperate zone cities winter cold prohibits this open type of construction and the trapping of daytime radiant heat makes the heat problem for urban dwellers worse with each added day of a summer heat wave.

Lack of space prevents full consideration of the physiologic and therapeutic aspects of heat stroke, heat exhaustion and heat cramps. Those particularly interested can find the matter treated in detail elsewhere.⁵ One point of great importance is the protection against severe

studies, however, and those of others in this field were carried out at approximately optimal environmental temperatures for the animal subjects, so that there was no way of knowing whether this ratio might not vary as external temperatures were raised or lowered.

In more recent studies on this point it has, in fact, been found that the optimal requirement for dietary thiamine is twice as high at 91 F as it is at 65 F. Animals show definite inadequacy in the heat at dietary thiamine levels twice as high as those at which inadequacy appears in a cool environment.

With animals on vitamin free synthetic diets to which have been added the known B vitamins in pure form those kept at 65 F seem not to miss the unknown B fractions ordinarily supplied to them as liver extract. Addition to their diet of liver extract or the newer B fractions (inositol, para-aminobenzoic acid, choline, biotin) seems to make little difference in growth rate or

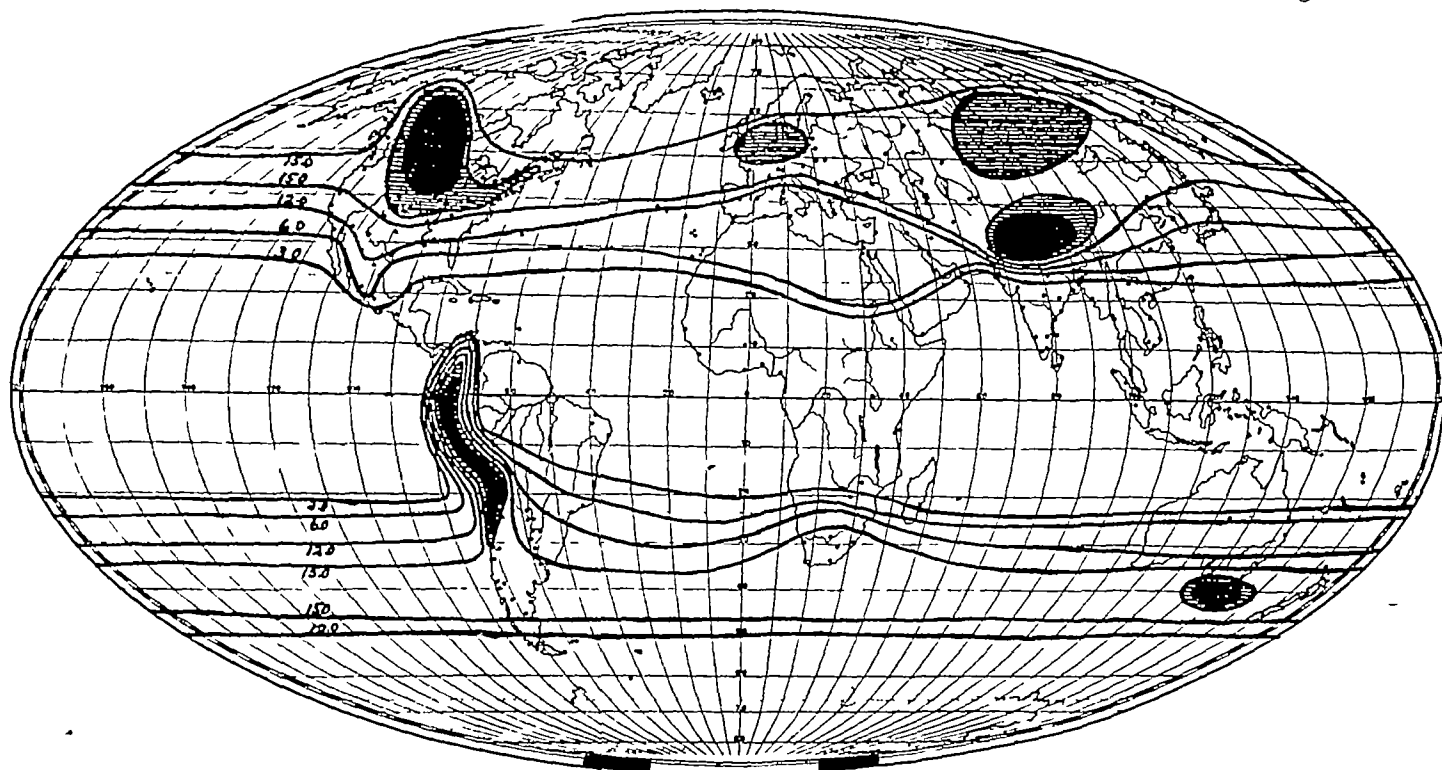


Fig 1—Climatic stimulation over the earth

heat afforded by a high intake of the B vitamins. Thiamine 10 mg a day has been found much more effective than salt tablets in warding off the effects of severe heat but it is probably safer to increase the intake of all the B fractions.

Vitamin Requirements—Since human vitality and energy level seem so dependent on ease of body heat loss and tissue combustion rate, it is well to look into the combustion process itself. Perhaps tissue requirements for the combustion catalysts are higher when the combustion rate is slowed down by difficulty in heat loss. With the lowered food intake of hot climates or in summer heat it may well be that a higher dietary content of thiamine and other combustion catalysts of the vitamin B group is needed to maintain optimal concentration for proper tissue oxidative processes. It has quite generally been considered, largely as a result of Cowgill's studies, that thiamine requirement is determined by the amount of dextrose there is to be burned, that a more or less constant ratio exists between thiamine requirement and total nonfat calories of the diet. His

development. In the heat, however, these newer and unknown fractions have now been found badly needed.

As pointed out recently,⁶ man relies on meats and other animal products for the greater part of his B vitamin supply. Nuts are also a rich source but are eaten in much lesser quantities, while the vitamin in legumes is largely destroyed by cooking processes. Of the vitamin rich cereals the only two in common use (rice and wheat) are robbed of their supply by milling methods. Meats thus assume a very important dietary role quite aside from their protein content. It is unfortunate that tropically grown meats and eggs have been found deficient in these essential vitamin catalysts.⁷ Residents of warm climates thus face a double handicap: they need a higher B vitamin intake but instead find their native animal products deficient in these elements. Hence they are depressed both by their difficulty in heat loss and by a widespread vitamin deficiency. In cooler climates the meats are richer in vitamin and the human need is less for each pound of food.

6 Waisman, Harry A., and Elvehjem C. A. The Vitamin Content of Meat. Minneapolis, Burgess Publishing Company, 1941.
7 Mills C. A. The Influence of Climate and Geography on Health. Bull. New York Acad. Med. 17: 922-933 (Dec.) 1941.

5 Mills, C. A. Medical Climatology, Springfield, Illinois, Charles C. Thomas, 1939.

Man's higher requirement for the vitamin B fractions in tropical warmth coupled with a poorer dietary supply, probably plays an important part in the widespread occurrence there of such deficiency states as beriberi and pellagra. The subject needs a thorough investigation, for on this situation may hinge a considerable part of the malnutrition and low physical level seen among tropical populations. The magnitude of the problem can be appreciated only when it is remembered that half the earth's human population lives under just such depressive heat as is being discussed here. We can as yet only guess at the many bearings this variation in vitamin requirement at different temperature levels may have in the problems of human welfare. Since it directly affects cellular combustion and the source of energy for all body functions, it must of necessity have important bearings on all the vital processes and functions of the body. A whole new field seems to be opened up by this dynamic view of physiologic response to climate.

CLIMATE AND DISEASE

The preceding discussion of climatic physiology provides a most useful background for an understanding of the geography of many diseases. Tropical people, with their more sluggish combustion rate and lowered vitality, die largely from infectious diseases, energetic residents of cooler lands die from the breakdown and degenerative diseases. Only with pneumococcal and streptococcal infections, mainly respiratory or of the nasopharynx, is the attack frequency higher in temperate regions and then only during the seasons of great cyclonic storminess. Since these disease differences are based largely on demonstrable differences in physiologic response to living environment and are susceptible of a considerable degree of control, it seems wise that the medical profession consider them against their proper physiologic background.

It is not at all surprising that clearest climatic relationships should be found for the diseases of metabolic overstimulation or breakdown. Metabolic stress rises highest in middle temperate regions where most nearly optimal heat loss conditions prevail, while toward tropical warmth evidences of such stress progressively decrease. Diabetes, with its breakdown in ability to prepare dextrose for the cellular combustion on which all bodily energy depends, shows this climatic relationship perhaps most clearly, but the relationship is also quite evident for pernicious anemia with its exhaustion in the production of red cells to carry the oxygen from

lungs to tissues. Toxic goiter and hyperthyroidism seem involved in this same environmental influence.

Perhaps most worrisome to the medical profession of stimulating regions are the growing evidences of stress and failure in the vascular system. On this system falls the most direct load as tissue combustion increases for it must transport to the tissues all the needed combustion factors. The advance of sudden heart failure toward ever earlier ages in American men of middle temperate latitudes is presenting an acute health problem. Over two thirds of American physicians dying in 1939 did so from primary failure of one sort or another in the circulatory system. Addison's disease with its adrenal failure and other exhaustion states such as myasthenia gravis and neurocirculatory asthenia also most frequently occur in middle temperature latitudes. And for some reason it is in these latitudes that can-

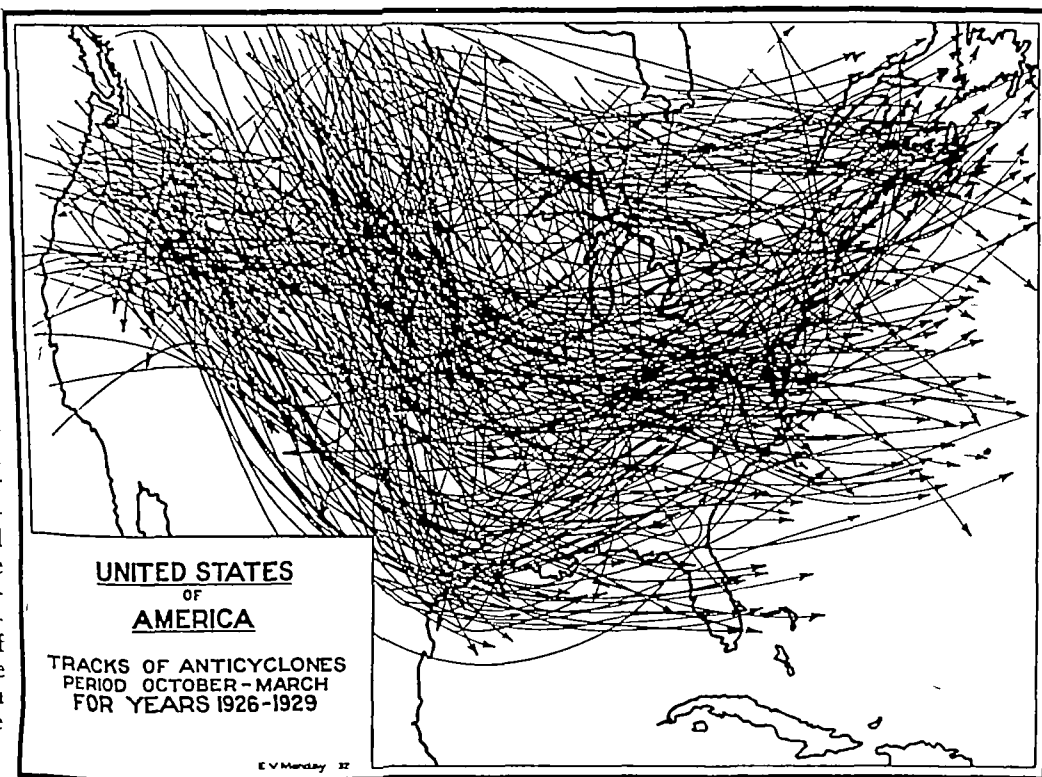


Fig. 2—Storm tracks over the United States winter highs 1926-1929

cer is presenting its greatest menace to man. Leukemia, which some consider a form of neoplasia, is almost exclusively a cool climate disease.

Infectious diseases present the other side of the picture, for with them greatest frequency and highest death rates go hand in hand with lowered tissue resistance in the debilitating warmth of tropical and subtropical regions. Temperatures there are more nearly optimal for parasitic and bacterial contamination of water and food supply, it is true, and added to this is the tremendous problem of insect vectors, but working beneath these major health threats in the tropics is the lowered general tissue vitality from sluggish cellular combustion. Figure 1, showing regional differences in the intensity of climatic stimulation over the earth, is presented here so that the reader may have before him this rough idea of the metabolic driving force exerted on man in the different regions. The methods used in calculating the indexes of climatic stimulation have been described in detail elsewhere.⁵

Cyclonic storminess, with the atmospheric changes which accompany passage of successive "highs" and "lows" over a given region seems in some manner related to the initiation of infectious disease attacks. Respiratory and rheumatic infections are most closely involved in this type of climatic effect, but it also influences such other infectious attacks as acute appendicitis and puerperal septicemia.

Respiratory infections are associated with winter cold and storminess in north temperate latitudes to a striking degree. Life hazards of all sorts reach a peak at this season for to the infectious dangers of the more violent storminess is added the greater stress of an increased metabolic load. In the southern hemisphere winter brings much less of an increase in life's hazards, for there storminess is least during midwinter cold. The increase in mortality from respiratory infections in the

seaboard of North America and to a lesser degree the southwestern coastal region of Mexico. Low pressure storm centers passing over these regions seem to bring much the same respiratory disease problems as are faced by people living in the temperate zone storm belts. They do not have the body chilling from sudden temperature change, such as afflicts people of stormy temperate regions, but the pressure changes alone seem capable of initiating the infectious attacks. Careful physiologic studies are badly needed in this field of pressure change effects, particularly as regards disturbances in tissue water balance. Present knowledge is extremely sketchy and inadequate.

In order to give a general appreciation of the storm problem over North America, there is shown in figures 2 and 3 the course followed by anticyclonic high pressure centers affecting the United States during the

four year period 1926-1929. Each such major "high" center affects an area 1,500 to 2,000 miles in diameter as it sweeps across the continent. From these figures one may get some idea of the relative differences in storm effects man faces in different parts of the continent during the winter, and the total reduction in storminess which comes with summer warmth. In the summer, storm centers cross the continent less frequently, travel more slowly and are accompanied by less abrupt and less extensive atmospheric changes. At no time of the year do major storm centers cross the southwestern

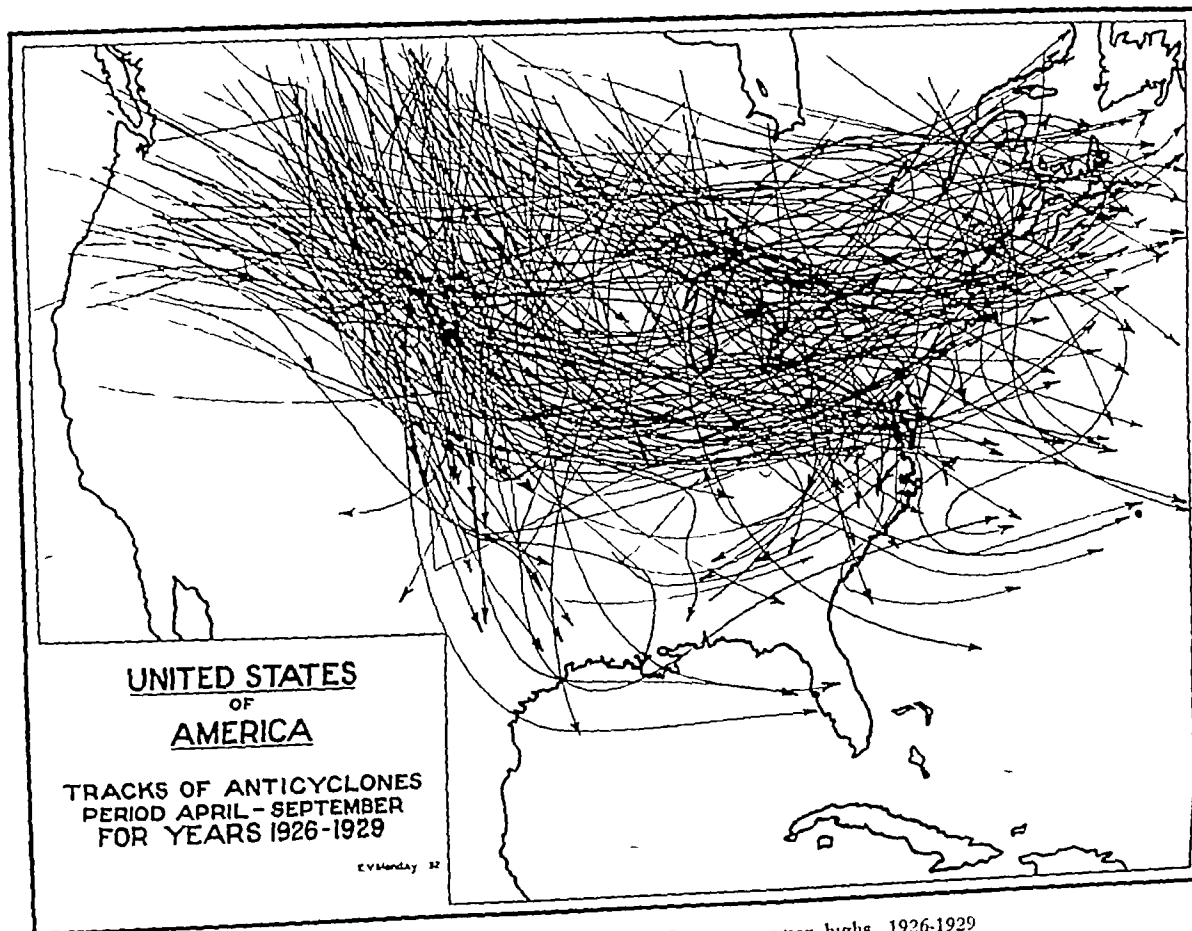


Fig. 3.—Storm tracks over the United States—summer highs 1926-1929

United States from summer low to midwinter high is almost three times as great as it is in similar latitudes of Australia. And in the United States unusually stormy winters are accompanied by much greater frequency of respiratory illness and death than are those of lesser atmospheric turbulence. Hospital admissions for acute rheumatic fever at Cincinnati show a similar parallelism with seasonal changes in storminess.

This relationship of storminess to infections is just as evident on a regional as on a seasonal basis. Acute respiratory infections and acute rheumatic fever are predominantly diseases of stormy regions being worst in the middle temperate belt of cyclonic storms and least troublesome in calm tropical warmth. Respiratory disease in the tropics becomes a real problem only in those regions afflicted with cyclonic storms of the typhoon or hurricane type. Such regions include most of the Philippine Islands and the eastern Asiatic coast up to Japan, those parts of India around the bay of Bengal, most of the West Indies and nearby eastern

part of the United States or the highland regions of Mexico. This nonstormy zone expands northeastward during summer warmth, and at this season people of the Old South are left with the stagnant moist heat typical of tropical regions.

These two storm maps deserve considerable study, for from them can be obtained much of the storm health story. It is in the stormy winter season and in the stormy regions of the earth that respiratory and rheumatic infections most severely afflict mankind.

CONCLUSION

Plans for spa therapy should not be made without due consideration of possible climatic and weather effects in the region to be chosen. Spas of the non-stormy Southwest are to be preferred for patients with respiratory or rheumatic complaints, while victims of the metabolic or degenerative diseases will usually benefit more in the calming warmth of the Gulf coast. For low vitality patients of tropical or subtropical areas

a summer sojourn in northern coolness works wonders, however they should beware of the cold and storms of northern winters. Each patient constitutes a separate problem in his relation to climatic environment, hence final decision must be made by the physician in charge. In reaching that decision the physician should be guided by the general principles of climatic and weather effects here set forth.

The therapeutic duties of a physician can no longer be concerned simply with the specific treatment of the disease at hand. He should look further afield for the larger forces affecting his patient's welfare and future health. And, among the outside forces bearing on these more general aspects of existence climatic and weather influences are of great importance. The most perfect diet cannot lead to physical vigor and high vitality unless the heat generated in its use can be readily dissipated from the body. The physician of the future will therefore need to develop more deeply his interest in, and knowledge of, climatic and meteorologic influences affecting man throughout his existence in the different regions of the earth.

5046 Oberlin Boulevard

Council on Industrial Health

THE COUNCIL ON INDUSTRIAL HEALTH HAS APPROVED THIS ARTICLE AS THE SEVENTH IN A SERIES ON MEDICAL SERVICE IN INDUSTRY
C. M. PETERSON, M.D., Secretary

INDUSTRIAL PHYSICAL EXAMINATIONS

PURPOSE

The purpose of industrial health programs is to promote and maintain the physical and mental welfare of all industrial employees. Physical examinations in industry are a means to this end.

Specifically, the objectives of industrial physical examinations are:

- 1 To facilitate placement and advancement of workers in accordance with individual physical and mental fitness
- 2 To acquaint the examinee with his physical status and to assist him in improving and maintaining personal good health
- 3 To safeguard the health and safety of others
- 4 To discover and control the effects of unhealthful exposure
- 5 To promote cooperative support and understanding of industrial health practices by employer and employee alike.

Unjust or questionable exclusion from work through improper application of the findings on physical examination in industry is against the public welfare and contrary to sound industrial health principles.

SCOPE

Industrial physical examinations should include:

- 1 Past medical, family and occupational history
- 2 Physical findings
- 3 Personality appraisal
- 4 Laboratory data
- 5 Summary and recommendations

GENERAL PROCEDURES

Since placement of the worker in suitable employment is an important objective of industrial physical examinations the examiner will obtain best results only when he is familiar with the industry he serves. Medical inspection of the plant or industrial premises at regular intervals is essential to an adequate physical examination program as well as in other aspects of industrial hygiene.

Physical examinations in industry are classified under two major headings:

- 1 Preplacement examinations of applicants for employment
- 2 Periodic reexaminations (regular or special)

In either case the examination should be complete. The examination should be conducted by the physician himself except such routine procedure as can safely be assigned to

trained assistants. The examinee should remove all clothing in a private room. Special arrangements and a nurse in attendance are necessary in examining women employees.

EQUIPMENT

Physical examinations will be facilitated if the following equipment is available:

Examining table	Dynamometer
Stools, chairs and couch	Centrifuge
Mirror	Microscope
Screen	Stethoscope
Scale and measuring rod	Ophthalmoscope
Metal measuring tape	Blood vacuum tubes
Spotlight	Otoscope
Distant and near reading cards	Reflex hammer
Color sense testing cards	Rubber gloves and finger cots
Nose and throat mirror	Tuning forks
Transilluminator	Hemoglobin outfit
Blood pressure instrument	Urinalysis equipment
Uter syringes (2 cc and 10 cc)	Garment racks
Thermometer	

RECORDS

Content—No single form has been devised to suit all requirements. The accompanying example is a composite of many used successfully in industry. Regardless of form, the records should contain:

1 Identification data: name, address, date and place of birth, race, sex, marital status, clock or social security number, and in certain circumstances photograph and finger prints. Some industrial physicians include name and address of next of kin.

2 Past medical and occupational history. Although details may be elicited by assistants, the importance of significant past health experience should be evaluated by the physician himself.

3 Physical findings

(a) Preplacement examination. The attached form is designed for preplacement physical examination. Clarity and uniformity of expression are desirable. Variation in procedure will depend on specific industrial exposures and special job requirements. Examinations for transfer to other work or on return to work after prolonged absences are essentially preplacement in character.

(b) Periodic examination. Reexamination should be conducted in the same detail as the original preplacement examination survey. The recommended form can be readily modified to allow for reexamination and to meet special requirements. General principles are fully described in *Periodic Health Examination—A Manual for Physicians*, Chicago American Medical Association, 1940. Repetition of physical examinations must be determined by the physician in charge based on his original examination and the nature of the industrial environment.

4 Personality data. Observation of temperament, personality and significant nervous or mental manifestations should be a correlated part of a complete examination. The brief outline suggested in the form has been used in practice with good results. Comparative schooling refers to the level of education attained in comparison with other children in the family.

5 Laboratory data. Urinalysis, hemoglobin determination, blood test for syphilis, chest x-ray examination, differential blood smear and blood sedimentation rate are employed in industry in about that descending order of frequency.

6 Summary and recommendations

Coding—Usage varies in coding or rating physical and mental status but the common intent is to classify examinees in one of the following groups:

- A General approval for all work.
- B Approval for placement under medical supervision.
 - 1 With limited physical exertion
 - 2 In nonhazardous work
 - 3 With orthopedic defect.
 - 4 With defective vision
 - 5 With defective hearing
 - 6 With neuromental handicap
- C General disapproval for any work.

From the public and industrial health standpoint the only absolute bar to immediate employment in ordinary occupation

should be communicable disease, psychosis or serious disabling injury or disease. Other considerations related to employer liability, workmen's compensation, factory acts and health codes must be determined separately for each jurisdiction.

Preservation and Use.—The examining physician may properly put information derived from records of industrial physical examination to the following uses:

1 All major findings should be discussed with the employee, with emphasis on the importance of obtaining immediate and adequate medical care.

2 A transcript may be supplied to the employee's personal physician or to other official community health agencies on consent of the employee.

INDUSTRIAL PHYSICAL EXAMINATION

Employer Name	City	State
Address	Clock No	
Age	Race	Marital Status
Sex	Social Sec No	
Personal Physician	Next of Kin	

Personal and Family History

Immunization Record

Occupational History

Physical Examination	Date	Examiner
Height	Weight	Chest Measurement {Inspiration Expiration}
Temperature	Pulse {Resting After Exercise}	Girth
Blood Pressure	Posture	Musculature
Skin	Glands	Hair
		Scalp
Vision {Distant {R L}		Corrected {R L}
Near {R L}		Corrected {R L}
Color Sense		Depth Perception
Hearing {R L}		Eyegrounds
Tonsils		Nose Throat
Teeth		Tongue
Lungs {R L}		Neck
Heart		Gums
Abdomen		Hernia
Genitalia	Rectum	Prostate
Spine		
Joints	Reflexes	Hands
Dysmenorrhea		Feet

Laboratory Data	Date	Examiner
Urine Appearance	Specific Gravity	Albumin
Blood Hemoglobin	Smear	Sugar
Wassermann	Kahn	Sedimentation Rate
X Ray Chest		Kilne
		Other

Personality Data				
Appearance {Neat Careless Slovenly}	Temperament {Aggressive Quiet Cooperative Noncooperative}	Intelligence {Quick Average Dull}		
Comparative Schooling {Advanced Average Retarded}	Summary {High Medium Low}			

Summary and Recommendations

Code

3 The employer should be given information in accordance with the suggested code described in this report to facilitate placement or promotion. A special simple form can be devised for this purpose. The employer should especially be notified of any condition or disability thought to be caused by faulty work environment.

4 Governmental agencies such as courts, workmen's compensation commissions or health authorities should be supplied with information on legally enforceable official order.

In all other respects the confidential character of physical examination records should be rigidly observed and access should be granted only on request or consent of the examinee preferably after preliminary discussion with the examining physician.

Suitable filing equipment and training of personnel should be maintained for the safe keeping of all medical records in the medical department.

PERSONNEL

Physical examination is an important service of an industrial medical department having regular medical staff supervision. Where considerable numbers of examinations occur, nurses, technicians and clerks are helpful in securing and recording data in routine procedure. They require training which should be accepted as a special responsibility of the medical director.

In small plants, employers customarily make arrangements with individual examiners. A modification of this practice is to secure the services of an examiner from a panel of physicians approved by the county medical society for services of this kind.

THE JOINT COMMITTEE ON INDUSTRIAL OPHTHALMOLOGY REPRESENTING THE SECTION ON OPHTHALMOLOGY OF THE AMERICAN MEDICAL ASSOCIATION AND THE AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY HAS SUBMITTED THE FOLLOWING REPORT TO THE COUNCIL ON INDUSTRIAL HEALTH FOR PUBLICATION.

C. M. PETERSON, M.D., Secretary

THE KEYSTONE TELEBINOCULAR IN INDUSTRY

The Joint Committee on Industrial Ophthalmology has participated in careful analysis of visual records made in industry employing the Keystone Telebinocular. These records have been correlated statistically with subsequent job performance, incidence of accidents and with conventional professional aptitude tests. Evidence at present permits the following appraisal of the industrial use of the Telebinocular.

1 The Telebinocular is a sturdy, well made instrument, originally designed as a hand stereoscope. In 1933 it was modified by attaching a special shaft and slide holder, mounted on a stand. The slides are modifications of the original Ready to Read Tests designed by E. A. Betts to measure the visual performance of school children.

2 The record forms designed to classify employees for jobs in accordance with visual ability are based on arbitrary standards not justified by actual experiment on thousands of industrial employees. A simplified form has been developed by a member of the Joint Committee which has proved to be more practical. The Keystone View Company is also working on a simplified record form.

3 The Telebinocular visual acuity tests at distance have, through the work of the Joint Committee, been correlated with Snellen equivalents.

4 The depth perception test, while not accurately graduated, can be used to advantage in screening out examinees in the lowest quarter of performance who are under consideration for special or dangerous assignments.

5 The phoria tests will identify most examinees with muscle imbalance lying outside the general range of normality. These measurements cannot be expressed in prism diopter equivalents.

6 The telebinocular has no adequate near point test of acuity in its series. Because of the importance of near point acuity in many jobs, special provisions will need to be made.

7 The color vision test, while inadequate as a whole, is useful in identifying certain types of color deficiency.

8 Several of the tests show little or no relationship to success on the job or with standard clinical practice in ophthalmology and are likely to create an impression of significant visual deficiency. Actually, the tests detect what might better be called substandard visual function.

The Joint Committee believes that the Telebinocular, used wisely by a properly trained tester, will uncover subnormal visual performance not detected by the common industrial practice of testing for central visual acuity alone. However, the tests employed for determining muscle balance, stereopsis and color sense have definite limitations. The existing standards for acceptance or rejection of examinees in industry or for the visual classification of employees are not accurate enough for dependable use. Instead, individual standards should be created in each industry based on available data and the practical experience of associated medical and ophthalmologic staffs.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORT HOWARD A. CARTER, Secretary

SIMPLE METHODS FOR PERFORMING ARTIFICIAL RESPIRATION

RALPH M. WATERS, M.D.

MADISON, WIS.

Artificial means to replace the act of breathing need not be complicated or difficult.¹ Any intelligent person, even a child, may be taught to perform artificial respiration which is adequate and safe.

In his teaching at Padua four hundred years ago Vesalius² emphasized the importance of proper respect for the thoughts of the ancients—an excellent attitude of mind for modern people. He demonstrated the adequacy of simple intermittent inflation of the lungs with air as a substitute for normal breathing. Goodwyn³ was the first physician to apply the knowledge of the exchange of oxygen and carbon dioxide during respiration. He called attention to the advantage of adding oxygen to the atmosphere used during artificial respiration. In the intelligent employment of these two contributions is embraced the beginning and the end of "artificial respiration." There is no more to it than that. And yet in the century and a half since Goodwyn's book was published much paper has been used in describing how and with what mixtures of gases ventilation of the lungs ought to be accomplished.

Children are thought to like mechanical gadgets, nevertheless, how frequently do we find father playing with the electric train weeks after Junior has found other interests. Enthusiasm for the clever construction and intricacy of a mechanical respirator is more likely to determine its purchase and use, even by a physician, than is thoughtful reasoning or experiment as to its physiologic effects, its simplicity, reparability and all round availability. It is not my present purpose to discuss the relative merits of the numerous manual maneuvers suggested for the performance of artificial respiration, nor do I intend to compare the advantages of the many mechanical gadgets manufactured for the purpose. It is desired only to emphasize four facts:

(1) that, as Vesalius demonstrated, gentle intermittent inflation of the lungs with air can serve as an adequate substitute for normal breathing, (2) that, if oxygen is available, it is desirable, as Goodwyn suggested, to add this gas to the atmosphere used, (3) that, regardless of the method employed, atmosphere cannot enter and leave the lungs if the air passages are obstructed, and (4) that elaborate equipment is not essential. If these four points are properly appreciated, any one can perform artificial respiration. It ought to be begun as soon as natural breathing stops by whoever is present at the time. Blowing into the subject's nose or mouth is the method which is always available.

¹ It is well recognized that the various manual maneuvers (Schafer, Silvester and their modifications) to accomplish artificial respiration are capable of accomplishing adequate ventilation of the lungs when the air passages are not obstructed. The impression is gaining prevalence that when apparatus is used it must be costly and elaborate. This paper emphasizes the long recognized fact that very simple mechanical devices are satisfactory. No originality is claimed for the method described nor is it claimed to accomplish more efficient or safer pulmonary ventilation than the manual maneuvers.

² Vesalius Andreas. *De humani corporis fabrica*. Basel: J. Oporini, 1543.
³ Goodwyn Edmund. *The Connection of Life with Respiration*. London: J. Johnson, 1788.

Manual maneuvers (Silvester, Schafer) can also be quickly applied. If apparatus is used, the simpler it is the better.

Anesthetists find it essential to be prepared to do artificial respiration at a second's notice. Overdose of an anesthetic or depressant drug, as well as various other accidents, sometimes stops normal breathing of the patient during an operation. The equipment described here is constituted of materials similar to those constantly used by many anesthetists to contain the anesthetic atmospheres breathed by their patients. They are therefore always in the hand of the anesthetist when an accident happens. In fact, when the anesthetist is alert, cessation of breathing is rarely dangerous. The method of artificial respiration described in the following paragraphs has been used to "breathe" efficiently for the patient over long periods of time. It is even employed during some surgical operations to hold in abeyance for hours the normal movements of the respiratory muscles when such movements may interfere with delicate surgical procedures. Such experience constitutes evidence that serious harm from such artificial respiration need not result. Simple apparatus, similar to that used by the anesthetists, costs little, is light and easily transported and can be employed by any intelligent person to perform artificial respiration. No elaborate and expensive machine will do a better job of artificial respiration.

EQUIPMENT AND PROCEDURE

Any manufacturer of an anesthetist's equipment can furnish a face mask with a 5 or 6 liter breathing bag of strong rubber connected to a rubber tube several feet long. A yoke to fit a small oxygen cylinder and a wrench with which to open the cylinder complete the assembly (fig. 1). The operator holds the mask tightly over the nose and mouth and fills the bag with oxygen (fig. 2A). If oxygen is not available, the operator may hold the rubber tube in his mouth and keep the bag partly filled by blowing into it. Compression of the bag with the hand (fig. 2B) forces atmosphere into the lungs (provided the mask is in approximately airtight contact with the face and the upper air passages are not obstructed). Release of pressure allows the atmosphere to return from the lungs. Such intermittent inflation of the lungs alternating with pauses to allow for deflation accomplishes adequate ventilation. The bag will need to be refilled frequently enough to replace the atmosphere which unavoidably leaks from under the mask during inflation. The frequency of inflation is relatively unimportant provided a pause after each

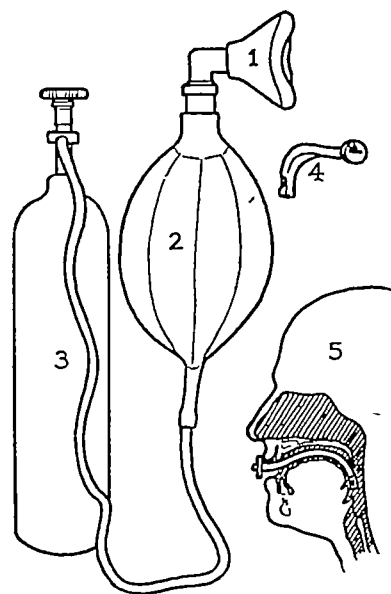


Fig. 1—A mask (1) to cover the mouth and nose and a sturdy rubber bag (2) connected to an oxygen cylinder (3) constitutes adequate equipment. (4) A properly shaped pharyngeal airway. (5) of metal or hard rubber when placed over the tongue into the throat (5) sometimes helps to maintain a free passage to the windpipe.

compression of the bag is sufficient to allow the chest wall to sink back to its passive condition and the lungs to collapse partially and force the inflated atmosphere out.⁴

Artificial respiration should resemble normal breathing. The operator ought to estimate how frequently and how vigorously this subject, save for the accident, would breathe for himself. Such activity should be imitated as exactly as possible both in depth and in rate. As pressure is made on the bag the thorax of the subject must be watched to see when it begins to expand. If beginning movement of the chest can be seen or felt, enough pressure has been exerted and the bag should be released. The operator must be sure that the outflow of atmosphere from the lungs is not impeded by the weight of the hand against the bag.

Free Exchange Essential—If for some reason passage to the windpipe is not open, atmosphere may fail to reach the lungs or it may be forced down the gullet



FIG. 2—The bag is filled with oxygen (A) and squeezed by the hand (B) to force atmosphere through the upper air passages and windpipe into the lungs. As soon as movement of the chest is seen, indicating that the lungs are filling, the operator's hand releases the bag completely to allow the lungs to empty. Normal rates of breathing are 12 to 20 per minute. Try to imitate nature in both rate and depth.

into the stomach. To assure a free passage to the trachea and avoid blowing up the stomach or forcing vomited fluids, food or other foreign substances into the windpipe, three procedures may be useful.

1 Empty the mouth, nose and throat of any liquid (water in drowning, vomitus) or solid substance (food, tobacco, chewing gum, loose teeth). This can be done with the fingers with a cloth sponge or, better, by gravity. Place the patient on his stomach, face down.

4 If the mask is held in really airtight contact with the face for several minutes, too much carbon dioxide—produced by the patient—may accumulate in the bag. Usually the necessary addition of oxygen or air to replace that which leaks between the mask and the skin of the face during the pressure of each inflation serves to remove carbon dioxide. Even if leakless contact is maintained, artificial respiration for less than five minutes will not permit a harmful accumulation of carbon dioxide. If long periods of artificial respiration are maintained with this equipment, frequent emptying and refilling of the bag is necessary. This is particularly important if breathing has stopped as the result of poisoning with volatile or gaseous substances such as ether or carbon monoxide.

and head lowered if possible (fig 3). A child can be "stood on his head." Hospitals are equipped with devices for sucking material from the throat.

2 The relaxed and swollen tongue may fall backward to sit on the opening to the windpipe. In the face down position, gravity tends to keep the tongue away from the opening. In addition, the operator may pull the tongue forward. (a) By pushing the jaw

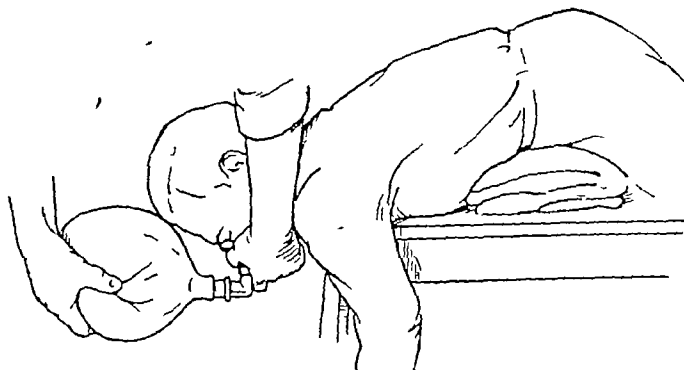


FIG. 3—When intermittent inflation of the lungs is done with the subject's face down, the head low and a pad under the stomach, water and other fluids may drain from the lungs and throat.

forward with pressure behind the angles of the jaw. (b) By grasping the tongue with a cloth (fig 4). To hold the tongue forward while a mask covers the face, a large safety pin may be passed through the midline of the tongue, a half inch from the tip. Persons needing prolonged artificial respiration are unconscious and the slight injury to the tongue caused by the pin results in little soreness afterward. (c) By placing a rubber or metal artificial airway if available (5, fig 1).

3 To prevent inflation of the stomach, the hand or a moderate weight may be placed over the upper part of the abdomen if the victim lies on his back, or a soft roll of cloth may be under his stomach when his face is down (fig 3).

ALTERNATIVE PROCEDURE

Intermittent Direct Inflation of Lungs by the Operator—If the apparatus just described is not immediately available, valuable time must not be lost. Lives

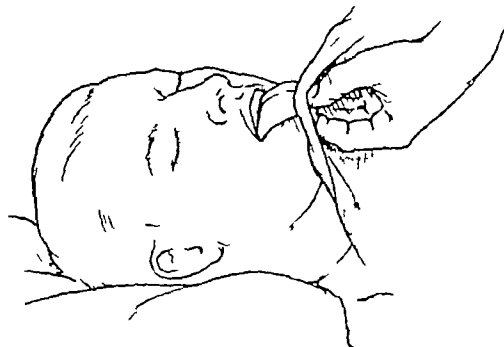


FIG. 4—With your handkerchief the tongue may be pulled forward before gently passing an artificial airway over it (see 5, fig 1).

are sacrificed by neglecting the first thirty seconds after breathing stops. Direct inflation of the lungs is always at hand (fig 5). Either the nose or the mouth may be blown into while one hand of the rescuer holds the other portal closed. The other hand, resting on the subject's chest, perceives the point at which the chest moves, in other words, when the lungs are sufficiently inflated. If no movement takes place, obstruction is present and the air passages must be cleared by the various maneuvers described.

COMMENT

Natural breathing is a very delicately adjusted mechanism for causing the atmosphere to enter and leave the lungs. The frequency of exchange and the depth of each breath are attuned to the needs of the blood and tissues for oxygen. The amount of air which enters and leaves the lungs each minute therefore varies widely for each individual and for the same individual at different times. Artificial respiration will therefore rarely exactly simulate normal breathing. The life processes of the individual who has ceased to breathe are at a low ebb and hence his demand for oxygen is comparatively little. When the air passages to the lungs are not obstructed, efforts at artificial breathing are apt to be overdone rather than underdone. If obstruction is present the opposite is true. Thoughtful and deliberate attention to the movements of the chest resulting from one's efforts will succeed while hasty and thoughtless activity may fail. Remember the object of normal breathing—to ventilate the lungs with air or oxygen which flows gently and slowly back and forth through the windpipe to and from the air sacs. Try to imitate normal breathing for each particular subject.

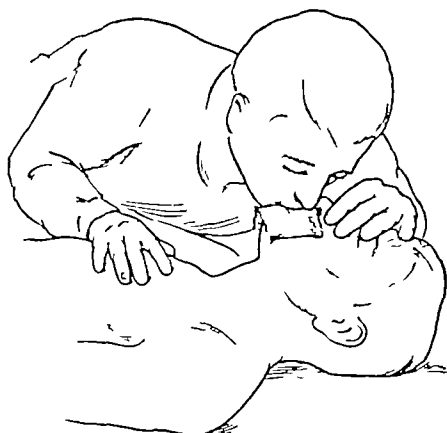


Fig. 5—With his left hand the operator holds the subject's nose closed while he blows into the mouth intermittently. A handkerchief or other light material prevents contamination. The operator's right hand rests lightly on the chest in order that he may appreciate when air is entering the lungs.

SUMMARY

If a reasonably robust person ceases to breathe, adequate artificial respiration may sustain life until breathing is reestablished. Only disappointment can result from performing artificial respiration on persons who cease to breathe as a terminal event in the course of disease. Methods are most useful which are instantly available and simple.

1 When breathing has stopped, do not concern yourself with calling for help, moving the patient, wrapping him in blankets or any maneuver other than keeping up intermittent rhythmic exchange of the atmosphere in his lungs.

2 Utilize inflation of the victim's lungs from the lungs of the operator, or exchange by manual maneuver, if apparatus is not at hand.

3 If and when a mask, rubber bag and a cylinder of compressed oxygen are available, fill the bag with oxygen and inflate the lungs by pressing on the bag.

4 In either case (2 or 3) use only sufficient pressure to expand the chest slightly. If one can see or feel the chest begin to expand as one blows or presses on the

bag, enough pressure is being used. The amount of pressure necessary may be great if the air passages are partially obstructed. Try to relieve such obstruction as soon as possible.

5 Allow adequate time for the lungs to empty before inflating them again.

6 Persist until the subject breathes for himself or until a physician has pronounced him dead.

7 If water or other substances are thought to be in the mouth, throat, and air passages, work with the patient in the face-down position with the head low if possible.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

CONCENTRATED OLEOVITAMIN A AND D—

"Fish liver oil, or fish liver oil diluted with an edible vegetable oil, or a solution of vitamin A and D concentrates in fish liver oil or in an edible vegetable oil. The vitamin A shall be obtained from natural (animal) sources and the vitamin D may be obtained from natural (animal) sources or may be synthetic oleovitamin D. Concentrated Oleovitamin A and D contains in each gram not less than 50,000 and not more than 65,000 U. S. P. units of vitamin A and not less than 10,000 and not more than 13,000 U. S. P. units of vitamin D." U. S. P.

For description and standards see the U. S. Pharmacopeia under Oleovitamin A et D Concentrata.

Actions, Uses and Dosage—See under Vitamin A and D preparations (N. N. R., 1943, p. 605).

WALKER VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

Concentrated Oleo Vitamin A-D Drops Each gram contains not less than 62,500 U. S. P. units of vitamin A and not less than 10,000 U. S. P. units of vitamin D. Natural esters of vitamin A (distilled from fish liver and vegetable oils) plus activated ergosterol in refined corn oil. Flavored with cinnamon.

DEHYDROCHOLIC ACID (See New and Nonofficial Remedies, 1943, p. 322).

The following dosage form has been accepted.

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Tablets Dehydrocholic Acid 0.25 Gm.

SODIUM CITRATE (See New and Nonofficial Remedies, 1943, p. 458).

The following dosage forms have been accepted.

BAXTER LABORATORIES, INC., GLENVIEW, ILL.

Sodium Citrate 4% W/V in Distilled Water 25 cc and 50 cc in Centri-Vac containers. A sterile 4 per cent solution of sodium citrate in distilled water.

Sodium Citrate 4% W/V in Distilled Water 50 cc. in Transfuso-Vac containers. A sterile 4 per cent solution of sodium citrate in distilled water.

TRYPARSAMIDE (See New and Nonofficial Remedies, 1943, p. 212).

The following dosage forms have been accepted.

MERCK & CO., INC., NEW YORK

Ampuls Tryparsamide 1 Gm., 2 Gm. and 3 Gm.

LIVER INJECTION (See New and Nonofficial Remedies, 1943, p. 392).

The following dosage form has been accepted.

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Liver Injection, 10 U. S. P. Units per Cc. 10 cc. vials. Preserved with 0.5 per cent phenol.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 30, 1943

NURSING SERVICE IN WARTIME

Nursing service "as usual" is gone for the emergency. The armed forces have a priority on nurses. The remaining nurses must be utilized for all non-military governmental agencies and essential civilian nursing services. The private duty nurses available in the country constitute a small group and there are numerous calls upon them for a wide variety of services. "Luxury" nursing is certainly out for the duration. The nursing section of the Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Sanitary Engineers and Nurses urges that private duty nurses not eligible for military service should be utilized for the care of acutely ill patients, first, in hospitals and, second, in homes. Every nurse should be used on the highest level of skill of which she is capable. A private duty nurse should be assigned to the care of a single patient only when it is impossible to arrange for adequate care by using a part of the service of a nurse who is attending also to other patients. In homes private duty nurses should be employed only when it is impossible to provide enough care through such facilities as are offered by the visiting nurse associations and the hourly nursing services. Another important civilian need is the work of private duty nurses in positions on the staffs of hospitals. Also there are such places as those associated with public health nursing agencies, industry and physicians' offices.

The superintendents of hospitals might give further serious consideration to their utilization of personnel. The tendency should be to utilization of nurses almost wholly by assignment to large groups of patients. The nurse's duties should be evaluated so that the major portion of her time is used in actual nursing care rather than in the serving of meals or in other duties which may be performed by nurses' aides or any of the other auxiliary services that have been developed. In some hospitals already the practice is developing to assign a nurse to the care of a single patient only on the recom-

mendation of the physician in cooperation with the superintendent of nurses and the superintendent of the hospital.

The work of nurses in industry is of increasing significance. The Procurement and Assignment Service has established criteria of essentiality for nurses in industry. Such nurses will not for the present be urged into military service. A nurse who is an industrial nursing consultant, or a state or city health department or a labor department nurse, a supervisor, a staff nurse who is working full time at professional nursing duties or a nurse who is the only full time nurse in an industry, will be considered for the present essential. However, nurses in industry will be expected to limit their activities to professional nursing duties connected with the medical department of the industry with which they are associated. Industries will be urged to utilize existing community services for nursing care if those resources are adequate to meet the needs. Furthermore, industry is urged to avail itself of nonprofessional technical aides whenever possible.

On the medical profession particularly rests the special obligation to utilize the services of nurses in the doctor's office only when absolutely necessary. In each community a local committee of nurses has been established which is to advise in determining offices that need professional nursing services. Physicians who employ a nurse without actual need are requested to release such nurses for use in essential nursing service and to employ other personnel instead. It is realized that the practices of physicians remaining in civilian service have in many instances increased so greatly that there is more need now for efficient office nurses than previously. Even under such circumstances, however, the employment of a nurse not eligible for military service may release an eligible nurse for the armed forces.

Since the Red Cross is charged with the recruitment of nurses for the armed forces, attention might well be given by that organization to the extent to which the nurses now employed by the Red Cross in this country are replaceable by nurses' aides or other partially trained personnel. This applies particularly to the employment of considerable numbers of nurses in blood banks, in teaching of nurses' aides, in mobile units and in other activities in which their time does not seem to be, in many instances, wholly utilized.

The problem of supplying nursing personnel has become for the present even more acute than the problem of providing physicians. Under the auspices of the Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Sanitary Engineers and Nurses a number of procedures are in contemplation which it is hoped will yield the names of every woman in the coun-

try ever qualified as a nurse and capable now of being drawn into nursing service. These plans will be announced as rapidly as they are developed. In the meantime a complete enrolment of young women in the U. S. Cadet Nurses Corps and serious consideration to the suggestions here made for the employment of available nurses will do much to help the rapidly growing crisis in the profession of nursing care.

MALARIA AND WORLD WAR II

The progress of medical science and of modern methods of sanitation have thus far proved adequate to prevent major epidemics in this war. In the past epidemics took a greater toll both among the belligerents and among civilians than did weapons of war. Bubonic plague, cholera and smallpox seem today to belong to a distant past. Minor outbreaks of typhus may be expected among the underfed vermin infested populations, but these can be readily controlled by methods of delousing, preventive vaccination and general quarantine measures. The most important military medical problem of the present war is malaria.

According to Stitt and Strong,¹ malaria by its prevalence is most important of all diseases in the world today. While the mortality and morbidity caused by this disease cannot be estimated closely, Russell² ventures, on such data as are available, that there are not less than three million deaths from malaria and at least three hundred million cases of malarial fevers each year throughout the world. The dispatch of our troops to highly malarial regions creates an immediate as well as a postwar problem. The problem of malarial epidemics is made acute by the global war. Malaria has always been one of the major scourges of the human race, influencing its health, retarding the progress of nations and affecting the course of many civilizations. Malaria was an important factor in the decline of moral and intellectual vigor which took place in Greece between 500 and 300 B. C. In India it is today the major cause of poverty and of lowered physical and intellectual standards.

Control of malaria among troops on many of our tropical frontiers presents a number of difficult problems. The program, according to Simmons,³ includes such measures as protecting the soldier against mosquito bites, against infection if bitten and against a possibly long and fatal illness if infected. Reliance must be placed on (1) the correct selection of camp sites, (2) the spray killing of adult mosquitoes with pyrethrum extract, (3) chemoprophylaxis with quinine

and atabrine, (4) the use of nets and screens (5) protective clothing and (6) the organization and instruction of personnel.

The recent advances in malariology involve, according to Russell,² the development of synthetic antimalarial drugs, the pyrethrum spray killing of the mosquitoes and methods of species eradication of mosquitoes. Today the Japanese control all the cinchona of the Netherlands Indies. With Germany they also control the Dutch stocks of cinchona alkaloids, together with quinine factories. The Allied Nations had to resort, therefore, to the use of American bark in the form of totaquine. The drug in somewhat larger doses is as effective as quinine sulfate. Quinine, hailed for many years as a specific in the treatment of malaria, is not the ideal drug. Plasmochin, a quinoline derivative is effective against gametocytes, especially those of *Plasmodium falciparum*, but is relatively ineffective against the schizonts of the same species. Atabrine, derived from acridine, resembles quinine in its action against all species of schizonts and in its weakness in affecting any of the gametocytes. All three drugs are, however, alike in their inability in a percentage of cases to cure without the occurrence of relapses and in their failure in safe doses to prevent infection by sporozoites. Not one of the three has been found to be a true causal prophylactic, although each in small doses tends to suppress clinical symptoms.

The Q A P treatment—quinine atabrine plasmochin—as endorsed by the Subcommittee on Tropical Diseases of the National Research Council⁴ represents an efficient treatment for acute malaria. The role of plasmochin, however, is now being subjected to reevaluation because of its toxicity. Totaquine or quinine sulfate (0.64 Gm.) is given three times daily after meals for two or three days until pyrexia is controlled. This is followed by atabrine (0.1 Gm.) three times daily after meals for five days. After two days of rest from medication plasmochin (0.01 Gm.) is given three times daily after meals for five days. For mild cases atabrine and plasmochin or quinine and plasmochin combinations are satisfactory.

Russell points to the recent eradication of *Anopheles gambiae* in Brazil as the first accomplishment of this kind at any time in any land. Although costly, the experiment establishes for the first time the possibility that in some future time malaria, if not its vector, may be eradicated from the United States.

The problem of immunity to malaria has been the subject of a recent editorial in *THE JOURNAL*.⁵ The malaria therapy of neurosyphilis offered many opportunities for the study of the problem of immunity in malaria. Whether effective serums or vaccines will be produced or whether a new and more effective specific drug will be developed cannot at present be predicted.

1 Strong, Richard P. Stitt: *Diagnosis, Prevention and Treatment of Tropical Diseases*, ed. 6 Philadelphia: Blakiston Company, 1942, chapter 1.

2 Russell, P. F. *Malaria and Its Influence on World Health*. Bull. New York Acad. Med. 19: 599 (Sept.) 1943.

3 Simmons, J. S. *Progress in the Army's Fight Against Malaria*. I. A. M. A. 120: 30 (Sept. 5) 1942.

4 Weed, L. H. *The Critical Antimalarial Problem and Its Solution*. J. A. M. A. 120: 1043 (Nov. 28) 1942.

5 *Malaria*. J. A. M. A. 123: 211 (Sept. 25) 1943.

DOES AMERICAN MEDICINE NEED A DICTATOR?

THE WAGNER-MURRAY-DINGELL BILL III

Revolutions often produce dictators who rise by force of personality or leadership but usually only after the revolution has run much of its course. The Wagner-Murray-Dingell Bill proposes to supply the dictator for American medicine even before the revolution begins. Compulsory sickness insurance produces the least evils when control of the actual practice of medicine is placed under the democratic management of medical associations. The quality of the medical service under such systems deteriorates least in proportion to the extent to which the establishment and maintenance of standards and quality of medical practice are confided to medical organizations. The authors of S 1161 have overlooked this lesson as they have many others in the field of medical practice. But they had little apparent medical aid in formulating their blueprint for American medicine.

In the Netherlands and Norway the medical profession resisted the attempts of Nazidom to break down the autonomy of the medical profession in spite of severe persecution. In so doing these physicians followed age long professional tradition. The whole body of physicians acting autonomously and democratically is the only institution that has ever succeeded in creating and enforcing standards of conduct not only in practice but in medical education and the operation of medical institutions.

S 1161 makes a shallow pretense of recognizing this fact by proposing to create a committee containing representatives of the organizations concerned with medical practice. This committee is to be purely "advisory," without powers and with indefinite functions. It is to be appointed by the dictator whom it is supposed to advise. Provisions are not suggested whereby state or local professional bodies may exercise judgment and supervision at the only point where such judgment and supervision can be effective.

While the Surgeon General of the United States Public Health Service is proposed as the dictator, it must be assumed that he will follow the pattern of administrative organizations and appoint subordinates responsible to him alone. Does any one believe he can avoid political considerations in making such appointments? He is to have the power to determine who will be specialists, what specialties they will follow and who will remain general practitioners. In fact, the fate of all phases of medical practice is vested in this dictator.

The framers of the proposed law apparently neglected entirely any consideration of the quality of the medical service to be distributed. More than fifty pages of the bill are given to the details of administration and financial arrangements, not one word is printed as to how the standards of medical practice shall be kept

at their present high stage. Mention is not made of measures that might maintain the steady upward progress of those standards that has been characteristic of the period during which their establishment and maintenance have been entrusted to the medical profession.

In the familiar pattern of advocates of compulsory sickness insurance, attention is focused on the political machinery that will distribute medical service, the quality of the service itself receives no notice. Medical care is a service given by physicians, the ability to diagnose and treat disease and protect the health of the public depends on the qualifications of the physician—on his education and training, his integrity, skill and initiative. The Wagner-Murray-Dingell plan is a blueprint for medical revolution, dealing with the sick and with the physicians who care for them as inanimate units to be moved at a dictator's will.

THE UTILIZATION OF HEALTH RESORTS FOR MILITARY RECONSTRUCTION

British physicians have found that health resorts are invaluable as centers for reconstruction of those disabled in war. Already in this war United States Army, Navy and Veterans Administration centers for rehabilitation are being established at many health resorts. The United States Army Medical Corps, for example, has established them at the Ashford General Hospital, White Sulphur Springs, W. Va., the Station Hospital, Camp Carson, Colorado Springs, Colo., the Fitzsimons General Hospital, Denver, the Army and Navy General Hospital, Hot Springs, Ark., the Percy Jones General Hospital, Battle Creek, Mich., the Moore General Hospital at Swannanoa (near Asheville), N. C., the Station Hospital at Davis-Monthan Airfield, Tucson, Ariz., and the Miami Army Air Force Hospital at Miami, Fla.

The Bureau of Medicine and Surgery of the United States Navy has established hospitals at Asheville, N. C., Yosemite, Calif., Glenwood Springs, Colo., and Sun Valley, Idaho.

The Veterans Administration, it is said, is contemplating the establishment of hospitals at such health resorts as Saratoga Springs, N. Y., Hot Springs, Salt Lake, Utah, Hot Springs, S. D., Bay Pines, Fla., and Mineral Springs, Texas.

Examples of satisfactory utilization of health resorts for rehabilitation of our wounded soldiers and sailors are to be found at the Army's Ashford General Hospital at White Sulphur Springs, W. Va., and at the Navy's Naval Convalescent Hospital, Glenwood Springs, Colo.

Typical of the reactions of far sighted medical military officers is the pertinent statement recently made

by a colonel in the Army Medical Corps who is commanding officer of one of the larger Army convalescent hospitals "From my experience in the last war, and as a medical officer since that time I feel that one of the greatest steps which have been taken in this war has been the effort directed toward the rehabilitation of the injured soldier. I firmly believe that the health resort centers which are being used by the Army are playing an ever increasing part in this program."

American health resorts will play, this time, an extremely important part in the rehabilitation of those disabled by the war. This is an important step in the right direction.

Current Comment

MEDICAL AND SOCIAL HISTORIES TO BE SECURED ON SELECTEES

The Selective Service System on October 12 directed local draft boards to gather detailed medical and social histories of registrants classified for induction into the armed forces. Medical field agents attached to each of the country's 6,500 local boards are being appointed to assist. The information gathered will be made available only to examining physicians for the armed services at induction stations. Major Gen Lewis B. Hershey, director of Selective Service, stated in a bulletin to draft boards that "The Selective Service System and the armed forces want to make certain that the greatest possible care is taken (1) to accept those registrants whose previous medical and social history indicates their ability to adjust themselves under situations of stress, including those who may be termed 'borderline' cases, and (2) to reject those registrants whose condition is such as positively indicates physical or mental breakdown, or failure to adjust themselves to the responsibilities of military service after being inducted." A procedure was also established for the review of the records of men rejected at induction centers or discharged from the armed forces for neuropsychiatric reasons. General Hershey stated that a local board, if it is of the opinion that such rejection or discharge was erroneous or the causes for such rejection have ceased to exist, may refer the registrant to the (Selective Service) medical advisory board. A study of 2,500 veterans of this war discharged before August 1942 showed that approximately 40 per cent were discharged because they were suffering from mental and emotional disorders which incapacitated them for military duty, and about 62 per cent of that number became so ill that they had to be hospitalized. General Hershey estimated that approximately 100,000 men will be discharged from the armed forces during this year for "nervous and mental reasons." Under the new program, which General Hershey has termed a medical survey, registrants will be required to fill out two forms—one containing an identity verification

and one detailing the registrant's education. Both forms will be forwarded to state Selective Service directors, who will check the information against state files of persons who have mental diseases and with school authorities. The secondary school systems and state and county health, welfare and social organizations are asked to cooperate.

HOME CARE OF THE TUBERCULOUS

The National Tuberculosis Association has just made available four new pamphlets on "Home Care of Tuberculosis," which should be especially useful in times like these, when the demands on the medical and all of the accessory professions are so great. These pamphlets are directed to the family physician in charge, to the nurses, to the family and to the patient himself. It is recognized that home care is in no sense the equivalent of treatment in a modern sanatorium. However, in times of war it may become the only possible method. The pamphlet for the physician is planned primarily to acquaint him with the nature of the instructions given in the other three pamphlets and also to give him special information regarding tuberculin tests, demonstration of tubercle bacilli and uses of the x-rays. The pamphlet for nurses is devoted primarily to specific instructions regarding nursing care and the protection of the nurse herself. There are also recommended reading lists and answers to questions frequently asked by patients. The pamphlet for the family gives advice regarding preventive methods and also assistance in home nursing. The pamphlet for the patient is most instructive, written in simple language and exceedingly useful. These pamphlets may be obtained from the tuberculosis associations serving in given areas, which obtain the pamphlets at cost from the National Tuberculosis Association.

ARTICLES ON "SPA" THERAPY

In this issue of THE JOURNAL appears the first of a series of articles dealing with the use of health resorts in the treatment of disease. These articles are developed under the sponsorship of the American Medical Association's Committee on American Health Resorts. The material is being prepared by selected authors familiar with the various phases of the subject. This series of articles is particularly timely now. Civilian patients and military casualties alike require medical and hospital care which must be rendered by institutions and professional, technical and other personnel severely restricted under wartime demands for manpower. Every institution suitable for the care of the sick or the convalescent and every therapeutic resource available should be utilized to its utmost efficiency. Spas and spa treatment have had much more extensive attention in Europe than in the United States, yet this country can match every European health resort as to climate and natural characteristics of the waters. In the sharpened focus of wartime needs, the Committee on American Health Resorts offers the series of articles beginning this week as a scientific contribution to American medicine and a practical participation in the war effort.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

THE SCHICK GENERAL HOSPITAL

The Schick General Hospital, which was formally opened on October 7, is located 3 miles north of Clinton, Iowa. The hospital has a capacity of 1,514 beds and consists of 103 separate structures. The grounds consist of 896 acres of land enclosed by an 8 foot wire fence. There are a chapel, laundry, post exchange, post office, ambulance service, recreational facilities and air conditioned operating rooms. Prior to the formal opening of the hospital there were 2,687 patients admitted (Sept 30, 1943), of whom 674 were operated on. The first patient was admitted on Feb 15, 1943, and on the same day the first surgical operation was performed, on a soldier from this command. On the day of the formal opening there were 1,175 patients in the hospital, representing every overseas theater of operation. The allotment of nurses is 120 and of enlisted men 512. These men are being trained as operating room, x-ray and laboratory technicians as well as ward attendants. The staff of the Schick General Hospital trained the enlisted personnel of the Eighth General Hospital before it was sent overseas and is now training the Ninety-First General Hospital. Major Gen Norman T Kirk, the Surgeon General, has designated the Schick General Hospital as a Neurosurgical Center. The entire project represents an investment of more than \$6,000,000.

The Schick General Hospital was named in honor of Lieut William Rhinehart Schick, first army medical officer to be killed in action during the current war. Lieutenant Schick graduated from the University of Illinois College of Medicine in 1939 and was appointed a first lieutenant, medical corps reserve, April 28, 1941. He was killed when the bomber in which he was flying from the United States to Pearl Harbor was shot down during the raid on Pearl Harbor, Dec 7, 1941.

Following is the medical staff attached to the Schick General Hospital:

Col Dean F Winn, commanding officer
Lieut. Col Lloyd E Gould, executive officer
Lieut. Col Benjamin M Banks, chief of medical service
Capt Wilson C Merriman, executive officer, medical service, and chief, communicable disease section
Capt Harold B Thale, chief of general medical section
Capt Harold Shellow, chief of dermatology section
Capt David W Hilger, chief of neuropsychiatry section
Capt Lewis J Dimsdale, chief of pulmonary allergy section
Capt Emanuel M Rappaport, ward officer, neuropsychiatry section
Capt Ralph W Barris, ward officer, neuropsychiatry section
1st Lieut. Manuel Sall, ward officer, neuropsychiatry section
Capt Kermit G Dwork, ward officer, officers' and women's section
Capt Harris V Lilga, ward officer, gastrointestinal section
Capt Max J Klainer, ward officer, cardiovascular section
1st Lieut. David Finkelstein, ward officer, cardiovascular section
Lieut. Col William J Carrington, chief of surgical service and chief, women's section
Major Moser L Stadiem, assistant chief of surgical service and chief, officers section
Major Don C Robertson, chief of general surgery section
Capt Willard H Bernhoft, ward officer, general surgery section
Major Joseph E Milgram, chief of orthopedic section
Capt Frank H Stelling, ward officer, orthopedic section
Capt Richard U Peterson, ward officer, orthopedic section
1st Lieut. Rolf Johnson, ward officer, orthopedic section
1st Lieut. L A Barrow, ward officer, orthopedic section, and ward officer, women's section
Major Samuel Shenkman, chief of neurosurgery section
1st Lieut. Irving J Spiegel, ward officer, neurosurgery section
Major Edward N Anderson, chief of urology section
1st Lieut. Lloyd L Wells, ward officer, urology section
Major Francis B Blackmar, chief of E E N T section
Capt Richard W Garlicks, assistant chief of E E N T section
Major Daniel R Mishell, chief of septic surgery section

Capt Leo C Harris, ward officer, officers' section, and consultant on thoracic surgery
1st Lieut. Solomon Winokur, chief of physical therapy section
Capt Jack Milowsky, chief of anesthesia and operating section.
Major Henry Edstrom, chief of x ray service
Capt Julius Rosenthal, chief of laboratory service
1st Lieut. Harney M Cordua, assistant, laboratory service
Capt Alonzo H B Drake, chief of outpatient service
Major Sidney Olans, registrar
Lieut. Col I J Frisch, public relations officer
Major E G Johnson, commanding officer, medical detachment, medical department and director of training division

FOREIGN MAPS WANTED FOR MILITARY USE

The Army Map Service, Corps of Engineers, U S Army, is seeking large scale maps (1:1,000,000 or larger) of areas outside the United States and Canada, road maps, topographic and geological maps, detailed topographic maps, city plans and port plans, as well as guide books and travel folders, gazetteers, postal guides and important atlases, aerial photographs, survey notes and geodetic control data (the more recently issued the better). If any of this material is not available as a gift, it must be specified as such, reproduction will be made and the originals returned to the owner. The Army Map Service does not need United States government issuances and such obvious sources as the National Geographic Society, as this material is already on file. Information concerning available material of this kind should be submitted to the branch office in one's locality.

Chicago Library Branch, Army Map Service, 79 West Monroe Street, Chicago, attention Miss Barbara C Todd, phone Central 3240.

New York Library Branch, Army Map Service, 1270 Sixth Avenue, New York City, attention Miss Viola Klippel, phone Circle 6-4250.

New Orleans Library Branch, Army Map Service, 900 A Maritime Building, New Orleans, attention Lieut. Chris R Ansel, phone Canal 1293.

San Francisco Library Branch, Army Map Service, 74 New Montgomery Street, San Francisco, attention Capt Norman F D Evelyn, phone EXbrook 2009.

SOLDIER'S MEDAL AWARDED FOR HEROISM AT ALGERIAN BASE

Twenty-two medical officers and enlisted men of the Army Medical Corps and two officers of the Air Corps were recently awarded the Soldier's Medal for outstanding heroism during an explosion of bombs on June 26, 1943 at an Algerian base under the command of Major Gen James H Doolittle, commanding general of the Northwest African Strategic Air Force, according to an announcement made by the War Department, Washington, D C, October 10. When a number of bombs exploded at an ordnance area these officers and enlisted men aided in removing the injured and placing them in ambulances and in checking the spreading flames, in spite of the danger of continued explosion. The citation states "The heroic action and valiant work continued until they were forced to withdraw by superior authority. The heroism, valor and courage in the face of great danger reflects credit on themselves and on the armed forces of the United States." The medical officers decorated are Frederick D Koehne, Major, M C, Oakland, Iowa, Raymond J Beal, Captain, M C, Kansas City, Mo., Milton J Layden, Captain, M C, Philadelphia, Theodore C Papermaster, Captain, M C, St. Cloud, Minn., Wayne W Warren (dentist), Captain, M C, Fort Dodge, Iowa, James L Smitherman, First Lieutenant, Air Corps, Overton, Texas.

FIRST LIEUTENANTS IN NURSE CORPS NOW MAY BE ASSIGNED TO WARD DUTY

The War Department announced on October 14 that members of the Army Nurse Corps now are eligible for more rapid promotion under a new table of organization which makes first lieutenants available for ward duty in addition to second lieutenants. Heretofore nurses in the grade of first lieutenant virtually were limited to duty in the chief nurse's office or were placed in charge of an operating room or of nurses' quarters. However, because of the importance of bedside care of wounded and sick, and to give qualified nurses a chance for advancement, the new organizational setup was effected. Under it first lieutenants may be put in charge of wards, sections or complete nursing services such as chief of surgical nursing service, chief of medical nursing service, chief of psychiatric section, orthopedic section or of single similar wards. At the same time it was announced that nurses over 45 are not being sent overseas for duty with the armed forces but are being given the opportunity of caring for battle casualties in general hospitals in the United States, to which wounded are being sent for treatment with the least possible delay. It was announced too that nurses who return from a theater of operations and desire further overseas duty may, after six months in the United States, be considered for reassignment overseas provided they are physically qualified.

AMERICAN MEDICAL SOCIETY IN ENGLAND

At the suggestion of Brig Gen Paul R Hawley, chief surgeon in the European theater of operations a medical society was organized for the members of the Medical Corps in that theater. The society has been named the American Medical Society, ETO. All officers of the U S Army Medical Corps are automatically made members of the society. The purpose of the organization is to provide a means for an exchange of current professional experience and intelligence of investigative work carried on by the members of the U S Army Medical Corps in this theater. Members of the Medical Corps of the several Allied Nations are invited as guest speakers. Monthly meetings are being held at the various general hospitals with sessions limited to one day. Subjects of interest to all branches of the Medical Corps are presented at each meeting and various problems are demonstrated by medical exhibits in much the same manner as is done at medical meetings held in the United States.

The first meeting, which was held at the 298th General Hospital on June 23, was addressed by General Hawley. At this meeting the following officers were elected: Lieut Col Robert Zollinger, M C, Fifth General Headquarters, president, Lieut Col William F McFee, M C, Second Evacuation Hospital, vice president, Major Clifford Graves, M C, Third Auxiliary Group, secretary treasurer, Col E J Tracy M C, Eighth Air Force, member at large, Lieut. Col R. S Muckenfuss, M C, First General Medical Laboratory member at large.

Other meetings have been held at the Thirtieth General Hospital and the Second General Hospital.

ARMY GENERAL HOSPITAL NAMED FOR ARMY NURSE

The War Department announced on October 16 that an army general hospital (the former Chicago Beach Hotel), Chicago has been named the Ruth M Gardiner General Hospital in memory of the first army nurse confirmed as killed in a theater of operations in this war. Second Lieutenant Gardiner was a member of the Army Nurse Corps attached to a medical squadron of the Army Air Forces and was killed in a plane crash in July 1943 at Nankai, Alaska, while serving as an air evacuation nurse. Lieutenant Gardiner graduated with the second class of flight nurses from the School of Air Evacuation, Bowman Field, Ky on Feb 18, 1943 and left there for evacuation duty with the Eleventh Air Force in Alaska on April 22.

FIRST FLIGHT NURSE RETURNS FROM COMBAT ZONE

According to the War Department, Second Lieut Henrietta Richardson was the first flight nurse to return to the United States from a combat zone. Serving with an Army Air Forces Air Evacuation Unit in North Africa, she found that "the morale factor is an important part of the flight nurse's job." A former airline stewardess, Lieutenant Richardson was stationed with the twenty-four other flight nurses in her squadron at the Maison Blanche airport near Algiers. Her unit flew shuttle routes from Maison Blanche into Tunisia, Tellerghma and Youks Leban and back to Algiers, Oran and Casablanca. From March 12, 1943 to May 12, 1943 she accumulated 132 hours of combat evacuation flying. Lieutenant Richardson is a graduate of St Vincent's School of Nursing, Los Angeles. She entered the Army Nurse Corps on Sept 14, 1942 and left the United States on Christmas day of that year for overseas assignment.

SURGEON GENERAL OF BRITISH ARMY FETED

Major Gen Norman T Kirk, surgeon general of the United States Army, gave a dinner on October 12 at the Mayflower Hotel, Washington, D C, in honor of Lieut Gen Sir Alexander Hood, visiting surgeon general of the British army. Other distinguished guests who attended the dinner were Rear Admiral Luther Sheldon, Major Gen R W Styer, Major Gen Leroy Lutes, Major Gen Shelley U Marietta, Major Gen George F Lull, Major Gen Albert W Kenner, Major Gen Merritt W Ireland, Brig Gen Hugh J Morgan, Brig Gen Raymond W Bliss, Brig Gen Fred W Rankin, Brig Gen George Dunham, Brig Gen Russell Reynolds, Brig Gen Raymond A Kelser, Col Arden Freer, Col Tracy S Voorhees, Col Henry C Chenault, Col Arthur B Welsh, Col Frank S Gillespie, Col R C McDonald, Col James R. Hudnall, Col Stanhope Bayne-Jones, Col Paul I Robinson, Col Marion F Du Frenne, Col Leonard Rowntree, Col Frank Strong, Col Rex Diveley, Col George R Callender, Col James R McDowell, Col William E Shambora, Col Silas B Hays, Lieut. Col Robert John Carpenter, Major C R Durnford, Major Robert S Gearhart, Dr Warren F Draper, assistant surgeon general of the United States Public Health Service, and Norman Davis.

PHYSICAL DISABILITY DISCHARGES OF THE ARMY

For the twenty month period ended July 31, 1943 discharges from the Army of the United States for physical disability totaled 208,296 men, according to an announcement made by the War Department recently. While more than half of these discharges were of a miscellaneous nature, the larger classifications in order were neuropsychiatric, heart disabilities, impairment of vision, tuberculosis and disabilities resulting from wounds. According to statistics from the Office of the Surgeon General, the percentage of disability discharges resulting from neuropsychiatric causes have increased within the twenty month period. Major Gen Norman T Kirk, Surgeon General, stated that "the Army has not granted disability discharges to any men who could be used effectively in the military prosecution of this war."

MEDICAL CORPS OFFICERS NEEDED FOR SERVICE IN PARACHUTE UNITS

The War Department has announced, according to the *Army and Navy Journal* of October 2, that medical corps officers in company grades and not over 32 years of age are needed for service in parachute units. Volunteers on acceptance will be sent for training to the Parachute School, Fort Benning, Georgia. Physical standards are those prescribed in section V War Department Circular 155 of 1942.

EVACUATION HOSPITAL IN ITALY BLOWN DOWN DURING STORM

As a result of a heavy rain and wind storm which leveled every tent in a great field evacuation hospital with the Fifth Army in Italy within five minutes, 1,000 sick or wounded soldiers had to be transferred to a nearby tobacco warehouse, according to an item published in the *Chicago Tribune*, October 13. Lieut Col Phil A Daly of Chicago, who superintended the removal, is director of the hospital staff, most of whose members came from the Michael Reese Hospital, Chicago. Two hundred of the patients most seriously ill were moved to a big barn and hayloft across the field. All this was accomplished in less than two hours. Colonel Daly stated that "It was really a mess, with mud over everything. How we got them all out of there, I don't know. If we had planned this it would have taken two days. The storm was almost a tornado. It blew over an x-ray generator." Capt Philip Marcus of Chicago, a member of the medical staff, said that one operation was finished under the operating table by flashlight after the tent blew down.

U S ARMY TRANSPORT SHAMROCK (EX AGWILEON) DESIGNATED AS HOSPITAL SHIP

The War Department, Washington, D C, in General Orders No 52, states that on Aug 3, 1943 the United States Army transport *Shamrock* (ex *Agwilcon*) was designated as a military hospital ship, in accordance with international practice, as set forth in the provisions of the Hague Convention X of 1907. In the future the United States Army hospital ship *Shamrock* will be operated in accordance with the provisions of applicable treaties. Notification of this designation was delivered through channels to the German, Hungarian, Bulgarian and Rumanian governments on August 12. The ship's master of this and all other United States military hospital ships will at all times maintain sufficient copies of this general order for presentation to any authorized agent of an enemy belligerent who may require it for inspection.

INDIANA UNIVERSITY MEDICAL CENTER HOSPITAL UNIT ARRIVES IN ENGLAND

According to word recently received at the Indiana University Medical Center, Bloomington, members of the medical division of General Hospital 32, organized and sponsored by the Indiana University Medical Center, have arrived in England following field training at Camp Bowie, Texas. The unit is composed of doctors, dentists and nurses from Indiana, who were inducted at ceremonies held at the Medical Center on May 13, 1942. During the organization of this unit it was planned to include 700 persons, including 120 nurses, but, since the unit was divided after arrival at Camp Bowie, the information received at the Medical Center did not state how many of the original complement were included in the group arriving in England.

AIR SERVICE COMMAND INSTALLS NEW TYPE X-RAY MACHINE

The latest type, money-saving x-ray machine, equipped with a photoröntgen unit, was recently installed at the Air Service Command, Patterson Field, Fairfield, Ohio. The old style x-ray machine with 14 by 17 inch plates was expensive to operate, while the new machine produces pictures only 5 by 7 over all at a nominal expense. The new machine has film specially mounted on reels requiring a short twist of a dial for a change, the procedure being the same as a roll of film in a camera. A special type tube is used also, which permits constant usage without burning out. This procedure makes it possible to x-ray the entire personnel of the Air Service Command and Patterson Field 28,000, at the rate of 2,000 weekly. Col John M Hargreaves is chief of the medical section of the Air Service Command at Patterson Field.

FIRST CLASS OF WACS ENTERS ARMY MEDICAL TECHNICIAN SCHOOL

According to the War Department, 145 enlisted women of the Women's Army Corps began training on September 10 at the Army-Navy General Hospital in Hot Springs, Ark., as medical, surgical, x-ray, dental and laboratory technicians to serve with the Army in hospitals in this country and overseas. In addition to the enlisted Wacs, twelve WAC officers also began the course in order to take over future training and administrative staff jobs at the school, thus releasing medical corps men. The course for x-ray, dental and laboratory technicians will last three months, that for medical and surgical technicians, two months.

PHYSICAL EFFICIENCY AMONG SOLDIER TRAINEES SHOWS IMPROVEMENT

The War Department, Washington, D C, announced on October 2 an average improvement of 21 per cent in physical efficiency among soldier trainees in the first term of participation in the Army Specialized Training Program. Performances were recorded in seven events among 2,557 trainees at the twelve institutions in which the program had its inception, both at the start of the course and approximately three months later. Gains in various events ranged from 6 to 30 per cent. Trainees devote six hours weekly to physical training.

ARMY PERSONALS

Col Crawford F Sams, former chief surgeon in the Middle East Theater of Operations, has returned to Carlisle Barracks, Pennsylvania, to become director of military art at the Medical Field Service School, according to an announcement by the War Department, September 30. Colonel Sams went overseas late in 1941 to help build bases and establish medical service in the Middle East for the U S Army personnel. He was in Tobruk when it was bombed eleven times in twenty-four hours and was stationed for a time at Cairo. Later he was assigned to General Montgomery's British Eighth Army as an observer and was with the group when it was attacked by Marshal Rommel's forces at Gozzala in May 1942. Colonel Sams graduated from Washington University School of Medicine, St Louis, in 1929. Colonel Sams was assistant department surgeon and for a time acting department surgeon in the Panama Canal Department from 1937 to 1939 and was instructor in logistics and medical service in the Infantry School from 1939 to 1941. During 1935 and 1936 he was director in the Department of Military Art at the Medical Field Service School, the same position to which he has just been assigned. Colonel Sams has been awarded the Order of the British Empire, Legion of Merit and Star of Africa, as well as American Defense ribbons, the American Victory medal from the last war and the Middle East-North African campaign ribbon.

According to the *Franklin (Ind) Star*, September 23, word was recently received that Capt Frank P Albertson, formerly of Trafalgar, Ind, is confined to an evacuation hospital in the South Pacific with injuries received on Guadalcanal, September 3. Captain Albertson, who graduated from the Indiana University School of Medicine, Indianapolis, in 1934, for sixteen months was stationed on various Hawaiian Islands after entering the service but was dispatched by plane on a mission to the South Pacific in July 1943.

According to the *Auburn (Calif) Journal* of August 28 Col William H Smith recently assumed the post of commanding officer of the U S Army General Hospital in Auburn, Calif. Colonel Smith graduated from Washington University School of Medicine, St Louis, in 1906. After graduating from the Army Medical School he was commissioned in the regular army medical corps in 1909. He served with the American expeditionary forces in Vera Cruz in 1914.

Lieut. Col Loyal Davis, consultant to the Army's chief surgeon, was in Chicago recently on a brief leave after a full year in the European theaters of war.

NAVY

STREETS NAMED IN HONOR OF MEDICAL DEPARTMENT PERSONNEL

The Bureau of Medicine and Surgery has named nine streets on the reservation of the new U S Naval Hospital, Dublin, Ga, for medical department personnel killed while on active duty since Dec 7, 1941, according to the *Army and Navy Journal* of September 11

Gendreau Circle honors the memory of Capt Elphege A M Gendreau (MC) USN, who was killed in combat action in the South Pacific on July 21, 1943, Captun Gendreau was force surgeon of the Pacific Fleet Blackwood Drive is named for Comdr James D Blackwood (MC), USN, senior medical officer of the U S S *Imcunes*, which was lost the night of Aug 8-9, 1942 Johnson Drive, Alexander Drive and Crowley Avenue are named for three officers who were killed in action at Pearl Harbor on Dec. 7, 1941 They were Comdr Samuel E. Johnson (MC), USN, Lieut. Comdr Hugh R Alexander (MC), USN, and Lieut. Comdr Edward E Crowley (DC), USN

Evans Avenue will honor Lieut. Comdr Edward E Evans (MC), USN who was killed during action in the Solomons on Dec. 12, 1942 Neff Place will be in memory of Lieut Comdr James B Neff (MC), USN Commander Neff was senior medical officer of the U S S *Juneau*, which was sunk on Nov 13, 1942 in the South Pacific. Trojakowski Avenue and Morrow Place will honor Comdr W C Trojakowski (DC), USN, killed in action in the South Pacific on June 12, 1942, and Lieut. (jg) Edna O Morrow, Nurse Corps, U S N, who was killed in an aircraft accident near San Francisco, Jan 21, 1943, while returning from the Pacific war zone.

NAVY DOCTORS REMOVE LIVE SHELL FROM HIP OF WOUNDED ENLISTED MAN

While standing at his post aboard an American warship in the South Pacific, Allen L Gordon a fire controlman third class of Rock Island, Ill, was struck below the left chest by a 20 millimeter antiaircraft shell, which pierced his intestine and lodged in his left hip The shell did not explode An emergency operation was performed on board the battleship to repair his intestinal tract. Later the sailor was taken ashore and, although the navy hospital at this outpost was still under construction, under the direction of Lieut. Comdr Harold W Jacob, formerly on the staff of the Western Pennsylvania Hospital, Pittsburgh, several days were spent in trying to locate the "dud" by x ray When the shell was located, a steel plate was prepared and the operation was performed in a few minutes by Lieut Comdr Jesse R. Griffith and Lieut. William C Wycoff, both from the Western Pennsylvania staff in Pittsburgh Although infection set in, Gordon was strong enough eventually to return to the United States where treatment was continued

BASE AND MOBILE OPTICAL UNITS

The Bureau of Medicine and Surgery, Washington, D C, in its weekly release dated October 11, states that a number of optical units have now been organized and equipped by the bureau Its mission is to provide emergency spectacle replacement and repair service, without charge, to all naval personnel in combat areas and other places not accessible to civilian facilities also to supply urgently needed corrective spectacles to naval personnel under like circumstances There are two types of these units, base and mobile and both are prepared to provide corrective or replacement lenses sufficiently accurate to meet the needs of combat personnel The base unit will be in a relatively fixed installation, while the mobile unit can be easily transported from place to place Each unit is a component of the Medical Department of the Navy and carries technical personnel officer and enlisted, selected on the basis

of previous optical service and special training The units will operate under the orders of the commanding officer of the area in the same manner in which naval base hospitals and naval mobile hospitals are now being operated

HIGH SPEED FLYING AMBULANCES FOR NAVY AND MARINE CORPS

According to a recent release from the Postwar Aviation Bureau, Chicago, a new high speed flying ambulance for navy and marine corps use, known as the Howard-Nightingale, is a small transport which will carry two badly wounded men in wire stretchers and a crew consisting of pilot, co-pilot and nurse and can operate from bases as far as 200 miles from battle zones It is manufactured by the Howard Aircraft Corporation of Chicago and St Charles, Ill, and is said to have the speed of at least 2½ miles a minute It is capable of landing in almost inaccessible spots, picking up the wounded and carrying them speedily to well equipped hospital units without shock or further injury to broken bones The first of these ambulances are either on their way across the sea or have reached combat zones

COMMANDER BARTHOLOMEW W HOGAN RECEIVES SILVER STAR AWARD

The Navy Department, Washington, D C, announced on September 10 the presentation of the Silver Star Medal to Comdr Bartholomew W Hogan (MC), USN, by Secretary of the Navy Frank Knox Commander Hogan's award was accompanied by the following citation

For conspicuous gallantry and intrepidity in action as Senior Medical Officer of the U S S *Wasp* when that ship was torpedoed by enemy Japanese submarines on Sept 15 1942 With his carrier swept by flaming gasoline and rocked by explosions, Commander Hogan despite his own serious wounds worked tirelessly caring for the injured until forced to abandon the stricken ship His outstanding professional skill and heroic devotion to duty throughout these perilous hours were in keeping with the highest traditions of the United States Naval Service.

Commander Hogan who graduated from Tufts College Medical School, Boston in 1925, in which year he entered the service, is now on duty at the Bureau of Medicine and Surgery, Washington, D C

FIRST WOMAN MEDICAL OFFICER TO BE GIVEN RANK OF LIEUTENANT COMMANDER

Lieut. Comdr Catherine Louise McCorry, MC-V(S), (F), USNR, is the first woman medical officer to be given this rank since the Navy has accepted women doctors, according to the Bureau of Medicine and Surgery in its weekly release dated October 4 Lieutenant Commander McCorry graduated from Loyola University School of Medicine, Chicago, in 1930 and has been employed by the department of public health in Illinois as a psychiatrist and internist since completion of her training It is expected that she will be ordered to active duty on or about October 25

COMPLETE INSPECTION OF ALL NAVAL CONVALESCENT HOSPITALS

The *Army and Navy Journal* of September 25 states that Rear Admiral Luther Sheldon Jr (MC), USN, assistant chief of the Bureau of Medicine and Surgery, and Comdr F J Braceland (MC) USNR neuropsychiatry section, have completed an inspection of all naval convalescent hospitals in the western and southwestern parts of the country As a result of this trip Admiral Sheldon is convinced that with some additional expansion the Medical Department of the Navy is in a position to handle any burden that may be thrown on it by reason of the war in the Pacific.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The chairman of the committee in charge of Wartime Graduate Medical Meetings has prepared a pamphlet indicating the nature of the organization, the regional committees, the areas of activity, a report of the undertakings of various regional committees, a list of the national faculty and the subjects discussed, and some answers to questions that have been propounded in largest numbers. This manual is exceedingly useful to all those who are participating in this important graduate education. Copies may be obtained by addressing Dr. Edward L. Bortz, 4200 Pine Street, Philadelphia.

PROMINENT PROFESSORS OF MEDICINE IN ARGENTINA DISMISSED

As a result of the Ramirez government's order that all office holders who signed a recent prodemocratic manifesto be ousted, a number of professors of the highest standing in the universities of Argentina have been affected. Hundreds of medical students are reported to have crowded into the operating theater to hear the world famed Dr. Bernardo A. Houssay deliver his final lecture, and hundreds of other students were said to have jammed into the final lecture of Prof. Alejandro Ceballos, another well known Argentinian. Lectures by Dr. Nicolas Romano and Dr. Marino E. Castex at the Hospital Nacional de Clinicas also attracted hundreds of Argentinians, who might otherwise have been unable to demonstrate their opposition to the nation's neutrality and its military government. Ramirez is understood to have stated that, besides being dismissed from public office, these men will not be allowed to leave the country.

COMPACT X-RAY UNITS FOR AIRCRAFT CARRIERS

Facilities for instant x-ray diagnosis of wounds and injuries are now available to airmen based on many U. S. aircraft carriers on the high seas. These war tailored x-ray units, developed and manufactured by the Kelley-Koett Manufacturing Company, Covington, Ky., are being installed in the Kaiser built carriers. The carrier borne unit includes a "rotary converter" to transform the ship's direct current to alternating current for x-ray uses. Many war plants use this specially designed x-ray equipment to detect flaws in vital metal parts before they are made into tanks, planes and guns. Major Gen. Norman T. Kirk, Surgeon General of the Army, who recently made a personal inspection of the Kelley-Koett Manufacturing Company, commended the workers for meriting the Army-Navy E and said "The x-ray machines you are making are used to salvage men during a time when weapons of destruction are being made for killing."

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America, with headquarters at 420 Lexington Avenue, New York City, is conducted by a nationwide group of physicians and surgeons to send medical aid to the armed and civilian forces of America and the Allies. In response to a request from the First Group Civil Air Patrol of Cleveland the committee is donating to this unit emergency medical supplies to supplement its minor first aid equipment. Packed in portable cases, the committee's contribution includes sulfonamide drugs, anesthetics, antiseptics, an instrument roll for minor surgery and many other essential medical items. These items will be used in ambulances or transported by airplane directly to the scene of disaster. According to Dr. J. P. Hoguet, medical director of the committee, over \$1,500 has been donated by the committee to civil air patrols. Emergency medical field sets and other supplies have also been sent to C. A. P. units in Falmouth, Mass., Reno, Nev., Beaumont, Texas, and Pascagoula, Miss.

WOMEN PHYSICIANS NEEDED IN ARMY AND NAVY MEDICAL CORPS

A nationwide campaign will be opened on December 4 by the American Women's Medical Association to stimulate applications by women physicians for commissions in the Army and Navy Medical Corps, according to an item in the *New York Times*, October 5. The drive, which will be under the direction of Dr. Zoe Allison Johnston, Pittsburgh, national president of the association, will start its campaign at the annual meeting of the organization's executive board in Pittsburgh. The medical department of the Navy is reported to have openings in each of three ranks, lieutenant junior grade, lieutenant senior grade and lieutenant commander, and the major demand is for women laboratory physicians, psychiatrists and pathologists. Dr. Eva Carey, president of the Pittsburgh Women's Medical Society, stated that, "While there is no present surplus of women doctors, there is available a valuable supplement to the male contingent."

SEDATIVES DONATED TO RECUPERATION CENTERS

Four thousand capsules of sedatives have recently been donated to the War Shipping Administration for use in recuperation centers in England and North Africa. Dr. Joseph P. Hoguet, medical director of the Medical and Surgical Relief Committee of America, pointed out that many seamen resting in War Shipping Administration convalescence posts abroad have manned ships loaded with explosives, many more have traveled through waters infested with submarines, and others are survivors of torpedoed merchant vessels. Many of these men are tense from the memory of grim ocean crossings, from the shock of combat or shipwreck and cannot sleep. These mild sedatives will relax strained nerves and ensure them a normal night's rest.

Sixteen large emergency medical field sets consisting of two valise sized cases for use by doctors for wounded and ill merchant seamen were also donated by the committee. These sets contain drugs, antiseptics, bandages, sutures, syringes, and minor surgery instruments to meet any emergency. They are carefully packed for immediate use, are portable, and can be carried directly to where the casualties are.

BRIG GEN JAMES S. SIMMONS AWARDED SEDGWICK MEDAL

Brig. Gen. James S. Simmons, director, Preventive Medicine Division, Office of the Surgeon General, Washington, D. C., was awarded the William Thompson Sedgwick Memorial Medal during the annual meeting of the American Public Health Association in New York, October 12. The medal is awarded each year for distinguished service in public health. Charles-Edward A. Winslow, Dr. P. H. and winner of the Sedgwick Medal in 1942, presented the award. Brigadier General Simmons graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1915 and entered the medical corps as a first lieutenant in 1916. He has devoted more than a quarter of a century to the upbuilding of public health laboratory service in the military establishment. At the outbreak of the present war, Brigadier General Simmons was entrusted with the organization of a division of preventive medicine in the Office of the Surgeon General.

PRISONER OF THE JAPANESE

According to a recent item in the *Denver Post*, 1st Lieut. William DeBacker, who was taken prisoner by the Japanese in the Philippine Islands, sent a message to his wife that he is in a prison camp in the Philippines and is well. Lieutenant DeBacker, who practiced medicine in Pueblo, Colo., before entering the service, graduated from the University of Colorado School of Medicine, Denver, in 1940.

PUBLIC HEALTH UNDER HITLER

NDZ of September 3 states that, besides the other welfare measures taken by the party of the state, medical help is of great importance to the civilian population after air raids. An important field of activity has thus arisen for the DRK, reports Heudtla, oberstfuhrer of the DRK in the periodical *Das Deutsche Rote Kreuz*. In raided areas the Red Cross disposes of thousands of Red Cross nursing auxiliaries who have been trained in first aid, and men and women assistants, besides nurses working in hospitals. They are always on call for an emergency, mainly for the medical patrols which set out immediately after an air raid.

When heavy destruction is caused among dwellings, doctors' practices are frequently destroyed too, so that medical attention for the sick and injured may be difficult for the first few hours and days after a raid. That is where the DRK patrol service comes in. The Red Cross emergency cars or simple ambulance cars, staffed with a doctor and several Red Cross assistants, cruise through the streets as 'mobile ambulances' to give first aid to persons suffering injury during the raid. The seriously injured are often taken to hospitals immediately. Of great value too is the help your neighbor scheme, of all members of the Red Cross, who are trained in first aid and who render effective aid to the injured while the raid is still in progress and thus prevent their condition from becoming more serious.

Medical stations have been set up in the big public air raid shelters to attend to the sick and injured. They are mainly staffed with women assistants of the Red Cross. Red Cross personnel also serve on evacuation trains from the moment they leave the raided areas until they arrive in the reception areas. In order to assure on an even wider scale the medical care of the civilian population hit by the air war, there is a continuous flow of fresh forces from the headquarters of the DRK to action stations. As the motorized units, such as the Red Cross emergency cars, busses and ambulances increase, all over the reich persons with special aptitude for such work form special standby units and, after a specialized training of several months, are sent to the raided areas. Well timed and generous planning is combined with constant readiness of the Red Cross forces to do their utmost. The sacrifices which this war demands of the civilian population are hard and painful.

Radio Hilversum (Dutch home service) of September 12 states that for the third time since its foundation the Medical Front held a national convention in Utrecht. The first speakers were Dr Keyer, head of the Department of Public Health and Dr Goette, leader of the Medical Front. After them the leader spoke. From his speech it appeared that some 500 doctors are required to go to Germany and are reluctant to go. Among other things, Mussert said "If we consider that it is the duty of every European to fight for the future of Europe why should those 'gentlemen' be allowed to stand aloof? They are always coming with touching stories about the fate of our workers in Germany. If they are too small minded to help the Germans, why don't they go and help their fellow countrymen in Germany? For this reason I assure you, my comrades, that I shall do everything in my power to send 500 or 1,000 doctors to Germany."

Algemeen Handelsblad of July 2 gives the reasons why those doctors who have protested against the recent decrees imposed on them by the reich commissar have been put into concentration camps. The cause was their first letter of protest and not the second.

"Measures have been taken by the sicherheitspolizei against the demonstrators, whose conduct must be considered serious. They are now in concentration camps, where they can ponder on the shortcomings of their misleaders. They are awaiting their punishment. In addition, their property will be confiscated in accordance with paragraph 1 of order number 33 of 1940.

"Some of these demonstrating doctors have chosen to disappear. Their surgeries have been sealed by the sicherheitspolizei. This incident also appears to be evidence of the constant collaboration between certain intellectual circles and Orange Bolshevik messengers which was proved recently in Amsterdam during the proceedings against the instigators of the attack on the population register.

"It is not at all a question here of the second letter sent to the reich commissar, which the English radio announced recently even before the letter had reached the addressee. In reality a few similar letters arrived only a few days later. This showed that the writers of the letter had been listening to the English broadcasts or had let themselves be guided by a group acting according to instructions from the London emigre clique. For these reasons no one will be surprised that such actions will have very unpleasant consequences for the writers concerned."

Reich Health Leader Dr Conti, according to DNB of July 31, has ordered all members of the medical professions, especially doctors, dental surgeons, dentists and nature cure practitioners who use x-ray equipment, to register with the competent reich defense commissioner, who will pass on the details to the office of the chief medical officer. X-ray apparatus and tubes which are not in use at present must be registered by the respective owners. This does not apply to manufacturers and dealers. Any change of ownership after registration must also be reported. Registration must be made not later than September 1.

Gardista, Bratislava, August 8, writes. At the invitation of the Slovak University Students' Association, German soldier students from the front who had been seriously injured came to Piestany some days ago. When I spoke with them about the fall of Orel and Catania they expressed neither apprehensions nor doubts but only dislike of journalistic expressions such as "successful disengagement from the enemy" (erfolgreiche Absetzung vom Feinde) or "disguised maneuvers" (maskierte Manöver), which fail to convince.

According to *Der Neue Tag* of August 7 the municipality of Olomouc has built a new emergency hospital in Blasius Square in addition to that already existing in the Neugasse (New Street). The new hospital, which will be for scarlet fever, diphtheria and similar diseases, is a two story building and has the most up to date medical equipment. It is run by a senior doctor assisted by two women doctors. The hospital holds 120 patients and is the largest in northern Moravia.

The *Journal officiel* August 20, published act number 430, dated July 29, 1943, enforcing the act of Dec. 16, 1942 on the premarital medical examination certificate. The prospective husband and wife are from now on both under compulsion to produce a prenuptial certificate not more than one month old, simply stating that the applicant was medically examined without any other indication.

Norwegian nurses are now being hard pressed to "do their duty" which means service at the front, according to *Stockholms-Tidningen* of September 8. The demand for nurses is urgent, especially on the arctic front, and the Germans want Norwegian nurses to take over the whole of the nursing service there.

According to NPD of July 31, German medicine has made the surprising discovery that a number of dangerous blood diseases can be cured by a systematic denial of vitamins to the patient. This new treatment opens up entirely new perspectives to medical science.

Zora of July 23 states that the incidence of spotted typhus this year is double that of last year. The cases are mainly among Gipsies and are in Deli Orman, Rhodopi, Yambol and the new territories. The chief of the Public Health Directorate has formed flying detachments for combating the disease.

According to NPD of September 6 exports of the German pharmaceutical industry will probably increase by 36 per cent in 1943 compared with the previous year. German medical preparations are at present being supplied to thirty-two different countries.

ORGANIZATION SECTION

THE VOCATIONAL REHABILITATION ACT AMENDMENTS OF 1943

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION,
AMERICAN MEDICAL ASSOCIATION

The President on Oct 9, 1942 sent a special message to the Congress recommending an expanded program for civilian vocational rehabilitation. This recommendation became an actuality with the enactment by the Congress of the Barden-LaFollette bill, so called because of its sponsorship by Representative Barden of North Carolina and Senator LaFollette of Wisconsin. It was approved by the President on July 6, 1943 as Public Law 113, Seventy-Eighth Congress. Now regulations have promulgated by the Administrator of the Federal Security under which the provisions of the new law will be effective.¹

IN GENERAL

Broadly stated the recently enacted law contemplates a continuation on an expanded basis of the general pattern of a federal-state program for civilian vocational rehabilitation that has been functioning since 1920. An Office of Vocational Rehabilitation has been set up in the Federal Security Agency to administer the program on the federal level. On a state level it will be administered by state boards of vocational education or by state rehabilitation commissions if in existence on July 6 and if such state boards delegate to the commissions the duty of so functioning. If, under the laws of any state, commissions for the blind or other agencies which provide assistance or services for the adult blind are authorized to provide them vocational rehabilitation, then such a procedure will be continued.

The new law places no ceiling on the annual federal sum that can be made available except the most elastic ceiling of "such sums as may be necessary." The term "rehabilitation services" and the term "vocational rehabilitation" are defined to include any services necessary to render a disabled individual fit to engage in a remunerative occupation. Physical restoration of the disabled will constitute a major objective of the expanded program. A state plan to be approvable must provide that vocational rehabilitation will be made available only to classes of employable individuals defined by the Administrator of the Federal Security Agency, including any civil employee of the United States disabled in the performance of his duty and any war disabled civilian whose disability results, without personal misconduct, from disease or injury, or from an aggravation of a preexisting disease or injury, incurred in line of duty while serving at any time after Dec 6, 1941, and prior to the termination of the war.

- 1 In the Aircraft Warning Service, or
- 2 As a member of the Civil Air Patrol, or
- 3 As a member in accordance with regulations prescribed by the Director of the Office of Civilian Defense, of the United States Citizens' Defense Corps in the protective services in civilian defense, or

- 4 As a registered trainee, taking training for such protective service

- 5 As a crew or member of the crew of a vessel owned by the Maritime Commission or the War Shipping Administration operated under charter from such commission

FEDERAL AID

A state plan having been approved by the Federal Security Administrator, the federal contribution will cover (1) the entire state administrative expenses of the program, (2) the entire cost of rehabilitation of war disabled individuals and (3) one half of the cost of the rehabilitation of other disabled persons. If any state is found by the administrator to have substantially exhausted its fund for necessary expenditures in connection with its rehabilitation plan, he may until July 1, 1945 increase the federal amounts payable to the state.

REMEDIAL TREATMENT OF PHYSICAL HANDICAPS

The House Committee on Education in H Report No 426 had this to say about physical restoration of the disabled in justification of the provisions in the new law providing for such restoration:

With respect to the great inadequacy or complete lack of, necessary physical restoration under practically all programs, with the exception of New Jersey, Connecticut and Wisconsin, your committee found that under the present program anything done in this field was done without any federal contribution. To put it mildly, the states had been encouraged to retrain a person around a disability, even where it would be more economical and satisfactory to eliminate the handicap itself. Federal funds are available for half the cost of the retraining approach but no federal funds are at present made available for the more obvious and satisfactory approach.

And again

Your committee considered most carefully the testimony of witnesses with respect to physical restoration, and drafted provisions which it is believed will permit the provision of such services but at the same time limit such services, both as to scope and as to recipients so as to avoid any possibility of making the vocational rehabilitation grants available for a state health or medical program.

Physical restoration must be particularly emphasized in speedily placing large numbers in productive employment. The testimony made clear that relatively simple operations are all that are needed to make a great many people available for work. Provision of physical restoration by the states under existing law is not forbidden. It has not been provided in the past because of the limitation of funds and the feeling administratively that expenditures for such restoration were not authorized. Hence the present clarification.

The expanded program contemplates that a state plan will provide (1) corrective surgery or therapeutic treatment necessary to correct or substantially modify a physical condition which is static and constitutes a substantial handicap to employment but is of such a nature that such correction or modification should eliminate or substantially reduce such handicap within a reasonable length of time, (2) necessary hospitalization, in no case to exceed ninety days if federal contribution is to be received, (3) such prosthetic devices as are essential to obtaining or retaining employment.

If these services are furnished only to persons "found to require financial assistance with respect thereto," other than war disabled individuals or civilian employees of the government, the federal government will contribute one half of the cost.

FINANCIAL NEED OF REHABILITANT

The regulations issued by the Federal Security Agency point out that the new law does not require a state to condition the acceptance of any individual or the rendition of any service

whatsoever under the plan on the financial need or economic status of the applicant. The state is free to establish and follow its own policies in this respect. A state may not, however, impose a showing of financial need, other than with respect to maintenance on a war disabled civilian or civil employee of the United States. Furthermore, unless a state plan does impose a financial need requirement on a rehabilitant, with the exceptions noted who is furnished corrective surgery or therapeutic treatment or hospitalization in connection therewith, the state will be required to assume the full expense with respect to such services.

FEE SCHEDULE FOR MEDICAL AND SURGICAL TREATMENT

A state plan to be approvable must provide such rules, regulations and standards with respect to expenditures on which federal grants are made available as the Administrator of the Federal Security Agency may find reasonable and necessary, including maximum schedules of fees for surgery, therapeutic treatment, hospitalization, medical examinations and for prosthetic devices.

The new regulations provide that pending a federal determination of such maximum fees and schedules of fees, a state plan should indicate all fee schedules and all arrangements in existence with individuals, agencies or institutions, public or private, affecting the amounts of fees for such treatment and training. Such fees and costs may not unless previously federally authorized, exceed those paid for similar services in the state by other public agencies such as workmen's compensation, public health, crippled children, public welfare and similar agencies.

FACILITIES MADE AVAILABLE BY FEDERAL GOVERNMENT

Section 5 of the law authorizes the Administrator of the Federal Security Agency to enter into agreements with two or more state vocational boards needing special facilities and services and to furnish such services and facilities on a cost basis. The administrator is authorized to establish the facilities needed.

The new regulations provide that, in order to facilitate equitable and effective application of the foregoing authority, state officials should submit as soon as may be convenient comprehensive lists and evaluations of public and private facilities available to the state for rehabilitation purposes and the area feasibly served thereby, indicating fields essential to a well rounded program of vocational rehabilitation with respect to which individual plans cannot be developed by reason of the lack, remoteness or unavailability of facilities.

In addition, it is suggested that each state board should make recommendations to the federal agency as to the means and methods by which the availability and potentially utilizable facilities can be developed through arrangements with other states for the use of such facilities or conversely as to the possibilities for making facilities available to areas in neighboring states in or near to which such facilities may be located or from the use of which adjoining areas might derive substantial benefit.

ADVISORY COMMITTEES STATE AND FEDERAL

The regulations provide that a state plan should set up a representative advisory committee. It is recommended that technical committees be formed in the fields of (a) medicine and surgery, (b) education general and vocational, and (c) vocational guidance, employment and placement of individuals. It is further suggested that a general committee be established which is equally representative of management and labor and which will include among others, representatives from the workmen's compensation agency, crippled children's agency, state department of welfare or security commission, civic and service organizations interested in the development of the program as well as representatives from professional fields. In cases involving administration by an agency for the blind, a state plan may provide for a separate advisory committee in relation to the blind.

The Administrator of the Federal Security Agency has announced the appointment of the following national Rehabilitation Advisory Council to advise the Office of Vocational Rehabilitation in connection with the expanded federal state program.

Claud M. Andrews, president, National Rehabilitation Association, Tallahassee, Fla.

Dr. Homer Cheek, executive secretary, Commission for the Blind, Raleigh, N. C.

Dr. A. W. Dent, president, Dillard University, New Orleans.

Dr. Kendall Emerson, managing director, National Tuberculosis Association, New York.

W. F. Faulke, chairman, State Rehabilitation Advisory Council, Madison, Wis.

Dr. M. E. Frampton, New York Institute for the Instruction of the Blind, New York.

Miss Bell Greve, executive secretary, Cleveland Association for Crippled and Disabled, Cleveland.

Stanwood L. Hanson, assistant vice president, Liberty Mutual Insurance Company, Boston.

Jay Hormel, president, George A. Hormel and Company, Austin, Minn.

E. Jay Howenstine, executive secretary, National Society for Crippled Children, Elyria, Ohio.

Monsignor John O. Grady, secretary, National Conference of Catholic Charities, Washington, D. C.

Howard Russell, director, American Public Welfare Association, Chicago.

Col. John N. Smith, Jr., director, Institute for the Crippled and Disabled, New York.

Dr. George S. Stevenson, Council on Rehabilitation, American Psychiatric Association, New York.

Dr. George D. Stoddard, state commissioner of education, Albany, N. Y.

Miss Marjorie Taylor, first vice president, National Occupational Therapy Association, Curative Workshop, Milwaukee.

Frank G. Thompson, director, State Department of Registration and Education, Springfield, Ill.

Dr. Philip Wilson, New York Society for Relief of the Ruptured and Crippled, New York.

Miss Catherine Worthingham, president, American Association of Physiotherapy, Leland Stanford University, Palo Alto, Calif.

Miss Betty Wright, American Society for the Hard of Hearing, Washington, D. C.

SPECIAL TECHNICAL SUPERVISION, CONSULTANTS

A state plan, the federal regulations suggest, should indicate the arrangements made or that will be made for the competent technical supervision of plan operations in the following respects: medical direction, psychiatric services and training and placement services. If it is not feasible to provide full time staff officials properly qualified from the technical standpoint in these respective fields, a state plan should indicate arrangements for services of properly qualified consultants to be available in the regular course of administration.

STATE LEGISLATION

If any state was unable to comply with the conditions of the new federal law on the date of its enactment, such state may nevertheless obtain the benefits of the law until sixty days after the legislature of such state first meets in due course after such date of enactment, or until the earliest effective date after such sixty days which could be given in such state to legislation passed within such sixty days to secure the benefits of the federal law, whichever is the later. In the meantime, however, a state must comply with the federal law to the extent possible.

DISTRICT OF COLUMBIA

All operations within the District of Columbia pursuant to the new law will be administered by the Division of the Federal Office of Vocational Rehabilitation, known as the District of Columbia Rehabilitation Service. All applicable provisions of the new regulations including the formulation by the service and submission for approval of a plan for the District will govern the operations of the service. The service will assume responsibilities with respect to providing rehabilitation services for resident war disabled civilians and employees of the United States disabled while in the performance of duty equivalent to those of the respective states.

consists of study and laboratory work on malaria and its three species, *Trypanosoma* and *Leishmania* (the sleeping sickness of Africa and South America), *Endamoeba histolytica*, intestinal flagellates of man and intestinal ciliates and sporozoa. Miss Mary E. Larson, assistant professor of zoology at Kansas, is directing the course.

KENTUCKY

Society News—On October 7 Dr. Aura J. Miller spoke before the Transylvania Medical Society in Louisville on "A Common But Seldom Diagnosed Lung Disease."—Dr. John W. Moore presented "Pregnancy Complicated by Bacterial Endocarditis (case report)" before the Louisville Medical-Chirurgical Society, October 8, and Dr. Harry S. Frazier, "Medical Practice During Wartimes", both are from Louisville.

Personal—Dr. Oliver P. Miller has been appointed chief medical officer of the Veterans Administration Facility in Lexington, succeeding Dr. Letcher C. Trent, who was transferred to a veteran's hospital at Mendota, Wis.—Dr. Leon A. Beardsley, Ithaca, N. Y., has been appointed health officer of Caldwell, Lyon and Crittenden counties, effective August 24.—Dr. Ellsworth H. John, Brownsville, has been appointed in charge of the tri-county health unit of Meade, Breckinridge and Hancock counties, with offices in Hardinsburg.

LOUISIANA

Changes at Louisiana—Recent appointments to the University of Louisiana State University School of Medicine, New Orleans, include that of William L. Williams, Ph.D., New Haven, Conn., to assistant professor of anatomy. Promotions at the medical school include:

Ralph N. Bullif, Ph.D., to assistant professor of anatomy.
Dr. Robert H. Bayley to associate professor of medicine.
Dr. Louis A. Monte to clinical associate professor of medicine.
Dr. Rupert E. Arnell to professor of obstetrics and gynecology.

MAINE

Naturopath Jailed for Illegal Operation—Carl E. Ahlquist, a Portland naturopath, in October started serving an eleven months jail sentence after the Maine law court had overruled exceptions filed following his conviction on an illegal operation charge at the January superior court term, newspapers reported. The law court ruled that "the record in this case discloses ample and sufficient evidence to prove beyond a reasonable doubt that the respondent, for a required fee," performed an illicit operation. At the court trial in January Ahlquist was found guilty of the charge by a traverse jury and was sentenced to serve eleven months in jail and pay a \$1,000 fine by Justice Albert Beliveau. In the trial Ahlquist was charged with an illegal operation on a 21 year old woman and county attorney Richard S. Chapman declared the operation had caused the woman to be ill, "so ill that there were grave doubts she would live."

MICHIGAN

Treatment for People with Defective Hearing—With the financial assistance of the Mott Foundation a new service has been added to the health program of Hurley Hospital, Flint, for the treatment of persons with defective hearing. The original work in the treatment of middle ear deafness with radium, particularly in children, was done by Dr. Albert C. Furstenberg, dean, University of Michigan Medical School, Ann Arbor, and his staff. The Mott Foundation has financed the purchase of additional radium for Hurley Hospital and acquired the necessary applicators for the work. The Mott Foundation was established several years ago by Mr. Charles S. Mott, Flint, a vice president of the General Motors Corporation. It sponsors various educational projects and outdoor activities. Within the last three years the foundation has financed a tuberculosis case finding program for all senior high school students in Genesee County, the work being carried on with the photoroentgen unit at Hurley Hospital. There is also a fund for work with crippled children to supplement that provided by the state, a project which is also being carried on at Hurley Hospital.

MINNESOTA

New Officers of Northern Minnesota Group—Dr. Herbert H. Leibold, Parkers Prairie, was elected president of the Northern Minnesota Medical Association at its annual meeting in Duluth, August 29. Dr. Richard Bardon, Duluth, was named vice president and Dr. Richard N. Jones, St. Cloud, was reelected secretary-treasurer. The time and place of the 1944 meeting will be determined at a meeting of the new board early in 1944.

Hospital Planned at Mayo Clinic—Plans are under way to construct a 1,200 bed hospital to be operated in conjunction with the Mayo Clinic, Rochester, according to *Hospitals*. The proposed construction will be eighteen stories high and cost \$6,000,000. It will be built in two units, with construction work starting as soon as materials are available. Twenty operating rooms and the same number of recovery rooms will be built into the third floor. Patients' rooms will extend from the fifth to the eighteenth floor. Both operating and patients' rooms will be furnished with equipment for air sterilization by light.

Corporation Practice Illegal in Minnesota—Because a corporation cannot practice medicine or dentistry in Minnesota the Midwestern Agricultural Workers' Health Association created to provide health services to migratory agricultural workers who could not obtain the specified services from other sources, will not be able to serve migratory workers in Minnesota. The association was incorporated under the state of Indiana and was to serve all the workers in Ohio, Indiana, Iowa, Illinois, Missouri, Wisconsin, Michigan and Minnesota, the states in which these migratory workers are employed who are imported from Jamaica in accordance with an agreement with the U. S. Department of Agriculture. Dr. Franklin S. Crockett, Lafayette, Ind., was elected president of the board of seven directors, three of whom were to be physicians in good standing in their state medical societies. *Minnesota Medicine* in reporting the situation, states that other arrangements are under consideration to care for these workers.

NEW JERSEY

Society Announces Season's Programs—The Cumberland County Medical Society opened its 1943 season October 12 with a talk in Bridgeton by Dr. Harry E. Bacon, Philadelphia, on "Diagnosis and Treatment of the More Common Anorectal Affections." Dr. Thaddeus L. Montgomery, Philadelphia, spoke, October 21, on "The Diagnosis and General Management of Ovarian Neoplasms." Subsequent meetings will be addressed by:

Dr. John R. Beardsley, San Diego, What Life Teaches a Physician, November 9.
Dr. Abraham I. Rubenstein, Philadelphia, Diabetes Mellitus, Its Treatment, December 14.
Dr. Robert A. Matthews, Philadelphia, Common Psychosomatic Problems Encountered in General Practice, Feb. 8, 1944.
Dr. William Harvey Perkins, Philadelphia, Medicine, An Applied Science, April 11.
Dr. Temple S. Fay, Philadelphia, Neurological Lesions in Children, June 13.

John Scott Medal Awarded for Work on Swine Influenza—Dr. Richard E. Shope, Princeton, N. J., a member of the Rockefeller Institute for Medical Research, has been awarded the John Scott Medal and "premium" of \$1,000 by the city of Philadelphia through its board of directors of City Trusts, for his "discovery of the complex etiology of swine influenza." Dr. Shope graduated at the State University of Iowa College of Medicine, Iowa City, in 1924. He is 41 years of age. Mr. John Scott, chemist of Edinburgh in 1816 bequeathed to the city of Philadelphia the sum of \$4,000, the income of which was to be "laid out in premiums to be distributed among ingenious men and women who made useful inventions." Reports concerning the award indicate that little is known concerning the donor or why he selected Philadelphia. The fund has been managed in turn by the city councils, the Franklin Institute and finally by the directors of City Trusts. It has grown to more than \$100,000.

NEW YORK

Lectures on the Biology of Cancer—A course of practical teaching lectures on the "Biology of Cancer" was to begin during October for biology teachers in public and private schools and colleges throughout Westchester County. The course will consist of four to six lectures by Clarence R. Hälter, Ph.D., assistant biologist at Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, under the auspices of the research council of the Westchester Cancer Committee.

Meeting on Tumors—There are now 179 cancer patients on the ten year survival list of Rochester hospitals, according to a report presented by the executive secretary of the New York State Committee of the American Society for the Control of Cancer at a meeting in Rochester, October 5. Seventy one new five year survivals were reported, bringing the total of five year survivals up to 673. A scientific program was conducted by Dr. Andrew H. Dowdy, associate professor of radiology, University of Rochester School of Medicine and Dentistry, and director of the Tumor Clinic of the Strong Memorial Hospital, where the meeting was held. Dr. Karl M. Wilson, professor of obstetrics and gynecology, University of Rochester School

of Medicine and Dentistry reported 5 cases of chorionepithelioma seen in the gynecologic service since the opening of the hospital in 1926, 2 of which have reached the five year survival point. Dr. Clyde A. Hentley, associate professor of otorhinolaryngology and bronchoscopy, and Dr. Dowdy presented 8 patients who had been treated with laryngofissure, laryngectomy and irradiation for carcinoma of the larynx. Dr. John M. Swan, Rochester, is executive secretary of the New York State Committee.

New York City

Cassius Watson Retires as Medical Director of American T and T—Dr. Cassius H. Watson for twenty-eight years medical director of the American Telephone and Telegraph Company retired on October 1. He has been succeeded by Dr. Melville H. Manson formerly medical director of the Bell Telephone Laboratories and since 1942 medical director of the New York Telephone Company.

Hospital Needs Interns—The Hospital for Joint Diseases announces sixteen places available on its general rotating service for nine months internship. One half of the number appointed may be permitted to continue for another nine months as junior residents, and thereafter one half of the number of junior residents may be continued for another nine months as senior residents. Three interns will begin on April 1, 1944, four on July 1 and four on October 1. Five interns will begin on Jan. 1, 1945. The hospital provides maintenance, uniforms and a stipend of \$15 a month. Applications should be addressed to the director, Hospital for Joint Diseases, 1919 Madison Avenue, New York 35.

Salvage Potential Manpower Among Tuberculous for War Production—The New York Tuberculosis and Health Association has expanded its rehabilitation service for the guidance of recovered tuberculosis patients by appointing personnel to project the program, which has for one of its objectives the salvage of potential manpower among the tuberculous for war production. The program includes guidance and counsel to the patient in order that he may find a job consistent with his ability to work and the promotional aspect of rehabilitation. The objective of the latter is to educate medical lay and employer groups regarding the employment possibilities of former tuberculous patients, the establishment of educational facilities for patients still in hospitals and guidance to hospital personnel in planning or expanding such educational facilities. Bernard S. Coleman, SB, secretary of the tuberculosis committee of the association, is directing the program.

American-Soviet Scientific Meeting—The National Council of American Soviet Friendship will sponsor a meeting at the Hotel New Yorker and Madison Square Garden November 6-8. The first session Saturday will be on "Planning a Postwar Reconstruction in the U. S. A. and the U. S. S. R." On Sunday panels will be held on "Soviet Science and Technology" and on "Public Health and Wartime Medicine in the U. S. S. R.," the latter panel to be held under the auspices of the American Soviet Medical Society. The congress sponsored by leading scientists throughout the country has as its honorary chairmen Dr. Walter B. Cannon, Cambridge Mass., Ernest O. Lawrence, Sc.D., Berkeley Calif. and Gilbert N. Lewis, Ph.D., dean of the College of Chemistry at the University of California, Berkeley. Among the speakers will be Leslie C. Dunn, Sc.D., Russian Research in the Biological Sciences, C. E. A. Winslow, Dr. P. H. New Haven Conn., Public Health in the Soviet Union.

Dr. Vladimir V. Lebedenko, Russian Red Cross representative in the United States, Russian Advances in Military Medicine.

Harold C. Urey, Sc.D., has accepted the chairmanship of the panel on Soviet Science and Technology.

Two Cents a Day Plan Offered by Hospital Service—In an effort to bring additional medical care and hospitalization to the lower income group the Associated Hospital Service of New York plans to introduce a two cents a day plan to supplement the three cents a day plan. Ward accommodations, instead of the semiprivate rooms available under the existing program will account for the difference in price according to the New York Times. Ninety-two hospitals had agreed to give this new service on October 15 but, it was stated between forty and fifty more were needed before the program could go into operation. Rates to the public will be about 20 per cent lower than those now in effect for an individual they will be about 56 cents a month and for a family \$1.50. Under the new contract which has been cleared by the state insurance department subscribers will be entitled to all ward services including room and board use of the operating room, x-ray facilities, medication, drugs and dressings. As in the three cents a day plan there will be a twenty one day benefit period. If necessary the subscriber will obtain a 50 per cent discount for an additional ninety day hospital stay. To receive these accommodations

the subscriber must be eligible for admission to the ward under the rules of the individual hospitals. The patients who cannot be admitted to the ward will be entitled to the use of a semiprivate room on payment of a small fee to the hospital, the Times reported. Maternity benefits will be provided only under the family contract. These will be limited to \$4 a day for ten days in normal cases. Should complications develop in maternity cases the subscriber will receive full benefits.

Advances in Medicine—A series of lectures on the Advances in Medicine will open at Mount Sinai Hospital, November 24, with members of the staff participating. The program is as follows:

Dr. Robert T. Frank, Recent Advances in Endocrine Therapy, November 24.

Dr. Marek L. Susman, Recent Advances in the Diagnosis of Congenital Heart Disease, December 8.

Dr. Gregory Schwartzman, Recent Advances in Bacteriology and Virus Research with Special Reference to Electron Microscopy, December 22.

Dr. Israel S. Wechsler, Recent Advances in Neuropsychiatry with Special Reference to the Electroencephalogram and the Shock Treatment of Psychoses, January 5.

Dr. John H. Garlock, Recent Advances in the Surgical Treatment of Diseases of the Esophagus, January 19.

Dr. Burrill B. Crohn, Recent Advances in Gastritis and Ileitis, February 2.

Dr. Asher Winkelstein, Recent Advances in Ulcerative Colitis, February 2.

Dr. Ira Cohen, Recent Advances in the Diagnosis and Treatment of Intracranial Lesions, February 16.

Dr. Ralph Colp, Recent Advances in the Surgical Treatment of Gastric, Duodenal and Jejunal Ulceration, March 1.

Dr. Arthur M. Fishberg, Recent Advances in Hypertension, March 15.

Dr. Reuben Ottenberg, Recent Advances in Chemotherapy, March 29.

Dr. Louis J. Soffer, Recent Advances in the Physiology of the Thyroid and Adrenal, April 5.

Dr. Paul Klempner, Recent Advances in Cellular Pathology, April 19.

Dr. Nathan Rosenthal, Recent Advances in the Study of the Hemolytic Anemias, April 26.

Dr. Harold Neufeld, Recent Advances in the Problem of Pulmonary Embolization, May 3.

PENNSYLVANIA

Physicians Honored—Four physicians were presented with testimonial certificates indicating the completion of fifty years in practice of medicine at a meeting of the Second Council District of the State Medical Society, Reading, September 8. The physicians are Drs. George C. Webster, Chester, Harvey F. Scholl, Prospect Park, Charles H. Schoff, Media, and George F. Seiberling, Allentown.

Child Care Centers—On August 1 six child care centers had been opened in Pennsylvania, one each in Darby, Erie, Williamsport, Rankin, York and Pittsburgh. Supported by federal funds, these centers are designed to provide certain hours of care for children whose ages range from 2 to 14. The centers provide care to children of parents only during "employment rendering service to the community or the nation." Other centers are being developed throughout the state.

State Assumes Control of Scranton Hospital—The state of Pennsylvania will direct the Hillside Home and Hospital for Mental Diseases, Clarks Summit, as a state institution in accordance with the recent transfer of control from the Lackawanna County Institution District to the commonwealth newspapers report. The transfer was unsuccessfully opposed by the Lackawanna County commissioners. Governor Edward Martin has appointed new trustees to control the institution and Dr. Emlyn T. Davies, Old Forge, former state representative, has been named acting superintendent.

Philadelphia

Annual Alpha Omega Alpha Lecture—Dr. Russell L. F. Cecil, New York, will present the annual lecture of the Jefferson Chapter of Alpha Omega Alpha at the Jefferson Medical College, November 11, on "Rheumatoid Arthritis."

Voluntary Contributions Finance Bulletin for Service Men—Voluntary contributions from individuals, physicians and friends of the University of Pennsylvania Hospital are financing a weekly bulletin mailed each week to former staff members of the hospital serving in the armed services. The bulletin has grown from an initial three issue release to four hundred weekly copies first published in June 1942 running on an average of four mimeographed pages. Originally Dr. Bernard I. Comroe and his wife financed the endeavor, but such interest has attached itself to the little paper that others seek to maintain at least one issue. Credit is given to the contributor in each issue. The bulletin contains news concerning the University of Pennsylvania School of Medicine and Hospital including results of scientific work, and personal news of men at home and in the service when released by censorship. Dr. Comroe, senior ward physician at the hospital, associate in medicine at the medical school and chief of the medical division of the student health service, prepares the material with the assistance of all voluntary contributors.

SOUTH CAROLINA

Personal—Dr Dargan Strother Pope, Columbia, has been appointed a member of the board of trustees of the Medical College of the State of South Carolina, Charleston, to fill the vacancy created by the death of Dr Thomas H. Pope, Newberry.

Physician Sentenced on Mail Fraud Charge—Dr Benjamin I. Siegel, Rock Hill, was sentenced to three years in federal prison in the closing case of federal court in Rock Hill, September 8, on a charge of using the mails to defraud, according to the *Charlotte Observer*. Dr Siegel is alleged to have charged the beneficial fund of the Rock Hill Printing and Finishing Company with services to employees. He mailed such bills and received payment also through the mails, the government charged. The physician had first entered a plea of not guilty but later changed his plea to guilty, it was stated.

TEXAS

New Health Unit—A new health department has been set up in Galveston County with headquarters in La Marque. Dr Edward M. Baines, formerly of Tampa, Fla., is the new director of health.

State Psychopathic Hospital Closed Temporarily—The Galveston State Psychopathic Hospital has been closed temporarily for repairs. Dr David Wade, acting superintendent, has been assigned to Austin in the office of the state board of control to serve as clinical director of state hospitals.

Motion Picture Lending Library Established—The State Medical Association of Texas has established a motion picture lending library. There will be a charge to cover the cost of transportation and handling, and borrowers will be required to pay the costs of damages to films while in their possession. The library now has a number of films which have been lent out by a number of firms for relending purposes.

UTAH

Dr Wintrobe Named Professor of Internal Medicine—Dr Maxwell Myer Wintrobe, formerly associate professor at the Johns Hopkins University School of Medicine, Baltimore, has been appointed professor and head of the department of internal medicine, University of Utah School of Medicine, Salt Lake City.

VIRGINIA

Portrait of Dr Leigh—A portrait of the late Dr Southgate Leigh, executed by W. S. Harney, was unveiled on June 10 in the staff conference room of the Leigh Memorial Hospital, Norfolk. The portrait was the gift of the Sarah Leigh Nurses' Association. Dr Leigh, who died on March 5, 1936, founded the hospital in 1903.

Graduate Course in Otolaryngology—The eighteenth annual spring graduate course on otolaryngology and ophthalmology will be given at the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, for a week beginning on April 4. The courses are available only to physicians specializing exclusively with the eye, ear, nose and throat.

GENERAL

Association for Research in Nervous and Mental Disease—"Trauma of the Central Nervous System" will be the theme of the annual meeting of the Association for Research in Nervous and Mental Disease at the Waldorf Astoria Hotel, New York, December 17-18. Dr Jefferson Browder, Brooklyn, is president of the association and Dr Thomas E. Bamford Jr., 115 East 82d Street, New York 28, secretary-treasurer.

Ear and Throat Meeting—The American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery will hold its first annual meeting in New York on November 12 under the presidency of Dr Romeo A. Luongo, Philadelphia. A clinic and business meeting will be held at the Manhattan General Hospital and a scientific meeting in the New York Academy of Medicine. The speakers at the latter will include:

Dr Samuel Fomon, New York, The Role of Plastic Surgery in the Field of Otolaryngology
Col. Samuel J. Kopetzky, M. C. A. U. S., subject not announced
Dr Alfred Schattner, New York, Report of Isograph Transplants in Identical Twins
Dr Arthur W. Proetz, St. Louis, Physiology of the Nose.

College of Chest Physicians—The American College of Chest Physicians, Southern Chapter, will meet at the Hotel Gibson, Cincinnati, November 16-18, during the session of the Southern Medical Association. Speakers at a luncheon session sponsored by the Ohio State chapter of the college of chest

physicians will be Drs William A. Hudson and David S. Brachman, Detroit, on "A Study of Rejection for Thoracic Abnormalities." A dinner meeting will be addressed by Dr J. Rodriguez Pastor, San Juan, P. R., on "The Tuberculosis Problem in Puerto Rico." Other speakers will include:

Dr Arnold S. Anderson, St. Petersburg, Fla., Chest Diseases in the Aged
Dr Jesse D. Riley, State Sanatorium, Ark., The Relative Importance of the Anatomic and Physiologic Concept in Tuberculosis
Lieut. Col. Carl W. Tempel, M. C., U. S. Army, New Growth of the Chest
Col. Arden Freer, M. C., U. S. Army, The Occurrence of Pulmonary Tuberculosis in Supposedly Screened Selectees
Lieut. Comdr. Dean F. Smiley (MC), U. S. Naval Reserve, Tuberculosis as a Navy Problem
Dr Chester A. Stewart, New Orleans, Tuberculosis Among Children and Young Adults
Dr Everts A. Graham, St. Louis, The Indications for Total Pneumectomy
Drs Paul H. Holinger and Ralph G. Rigby, Chicago, Bronchoscopic Kodachrome Motion Pictures of Tracheal and Bronchial Tuberculosis
Dr Richard M. Davison, Chicago, Lung Resection in Chronic Pulmonary Diseases

Medical Panel Created by Automotive Council—A medical panel has been created by the Automotive Council for War Production to make available to all automotive companies the experience and knowledge developed in the medical departments of the leading companies to the end that the whole industry may have the benefit of information available on general or specific questions of industrial health. At its organization meeting, August 25, Dr John J. Pendergast Jr., medical director, Chrysler Corporation, was elected chairman. Members of the panel, all heads of the medical staffs of their companies, are Drs Archibald W. George, Packard Motor Car Company (Joseph L. Zemens, alternate), Frank J. Jarzynka, Bohn Aluminum & Brass Manufacturing Corporation, William T. Krebs, Hudson Motor Car Company, Harley L. Krieger, Ford Motor Company (Howard P. Staub, alternate), Clarence H. Kuhlmann, Cleveland Graphite Bronze Company, Clarence D. Selby, General Motors Corporation, and Dr Pendergast, Chrysler Corporation (Stuart F. Meek, alternate), all of Detroit. Harlan V. Hadley, associate manager of the Council's Manpower Division, is secretary of the group. At present consisting of seven members, the panel is to be expanded to twelve members, with the panel itself nominating and electing new members. The panel has entire freedom to limit or expand its activities, subject only to the provision that such activities must be in the national interest of "expediting the output of armaments for the fighting forces." It is planned to hold four meetings of the panel annually in the hospital offices of the members to discuss and act on medical questions of industry-wide import. It is also planned to maintain the complete anonymity of the source of inquiries and the source of replies to such inquiries. All questions will be addressed to the secretary, Harlan V. Hadley, who will forward them with all signs of identification removed to all members of the panel. Members in turn submit their replies to the secretary, who forwards them, again with all signs of identity removed, on instruction from the chairman, to the member of the panel designated to write a composite report. The composite report is then supplied to the source of the question over the secretary's name and with the name of the doctor who wrote it withheld. The policy will be to answer inquiries on a purely scientific basis rather than from a standpoint of the individual practice of the doctor's company. Another policy will be that the chairman may answer inquiries as to medical standards by citing the standards created by recognized medical groups, when available, with or without modification as each situation requires. This modification principle is shown in the government's standard for the employment of pregnant women. Where the government suggests a minimum of six weeks' leave for the woman before delivery and a minimum of two months' leave after delivery, the panel feels that she should leave her employment on or about the third or fourth month of gestation, depending on her specific condition, and not return until she is three months post partum. Other questions before the panel are the employment of partially disabled war veterans or other physically handicapped persons, dermatitis, the general use of vitamin pills, the relief of overtension resulting from fatigue, preemployment physical examinations and periodic continuing examinations of food handlers.

Report of Rheumatic Fever Conference—On October 5, 6 and 7 the Children's Bureau of the U. S. Department of Labor held a national conference in Washington, D. C., on rheumatic fever. Since 1939 a portion of the federal funds appropriated annually for crippled children's services has been used for the development of state services for children with rheumatic fever and heart disease. Fourteen states now have

such programs in operation, and several additional states have completed plans for the development of these services. Attending the conference were representatives from state agencies, members of the Children's Bureau Advisory Committee, experts in the field of clinical investigation pertaining to the problem of rheumatic fever, and representatives of numerous lay and professional organizations concerned with the health and welfare of the rheumatic child. At the opening session of the conference Col Leonard G Rowntree, M R C chief Medical Division, Selective Service System, pointed out that rheumatic heart disease is responsible for thousands of rejections from the armed forces. Among 13,000,000 men examined over 230,000 were classified as 4 F because of cardiovascular disease. Dr Rowntree estimated on the basis studies made by the National Research Council that nearly half of these cardiovascular defects were caused by rheumatic fever. Brig Gen Hugh J Morgan, A U S, medical consultant, Surgeon General's Office, reviewed the current experience in the Army in dealing with the problem of rheumatic fever, indicating that the problem is essentially the same in the Army as in the civilian population. He urged that civilian health authorities follow the lead of the Army in taking vigorous steps to combat this disease. Lieut Comdr Alvin F Coburn (MC), U S Naval Reserve, stated that conditions in navy training camps are conducive to the development of rheumatic fever.

The prophylactic use of the sulfonamides in the prevention of recurrent attacks of streptococcal infections in rheumatic patients was considered at a round table discussion. Participating in the discussion were Dr Homer F Swift, New York, Commander Coburn, Dr Ann G Kuttner, Boston, Dr Arild C Hansen, Minneapolis, Dr Katharine G Dodge, New York, Major William H Button, M C, A U S, Dr Caroline C B Thomas, Baltimore, and Dr Caroline A Chandler, Washington. There was general agreement among the discussers that the sulfonamides have been proved to be effective in the prevention of recurrent attacks of rheumatic fever. Warning was given against the indiscriminate use of these drugs without close medical supervision. The use of the drugs as a prophylactic measure for rheumatic patients should be considered only as an adjunct to a general regimen designed to provide adequate health supervision of the rheumatic child. At other sessions of the conference emphasis was placed on the importance of early diagnosis during the initial attack of the disease, referral of patients to special diagnostic clinics, examination of siblings of rheumatic children, provisions for institutional care during the period of active infection, educational and recreational activities for children confined to bed for long periods of time, special educational services for children with heart disease, and coordination of community facilities and services for the care and management of the rheumatic child. Those attending the conference agreed that rheumatic fever represents an important public health problem in the United States but that facilities and services have not been developed to the point where the needs of children afflicted with this disease are being adequately met. Many members of the conference pointed to the need for further opportunities for local physicians to become more fully acquainted with the disease and with the methods for the care and management of the rheumatic child. It was apparent that the problems of children afflicted with rheumatic fever cannot be met by the services of any single individual or agency for the close cooperation of physicians, nurses, social workers, educators and others engaged in related fields. Dr Thomas Duckett Jones, Boston, in summing up the conference at the closing session called attention to the progress that had been made in many states during the past three years in the care of the rheumatic child through the development of the state programs and pointed to the need for the extension of existing programs and for the development of similar services in other states.

LATIN AMERICA

Cancer Congress — The Primer Congreso Mexicano de Cancer and Segunda Semana Medica de Occidente will be held in Guadalajara, Jalisco, Mexico, during the first week of November. Among the invited speakers are Dr Charles W Mayo, Rochester, Capt. Waltman Walters (MC), U S Naval Reserve, Lieut Col James T Priestley, M C, A U S, Dr Howard K Gray, Rochester, Dr Angel H Roffo, Buenos Aires, Drs Luis Paniñas and Juan Llambes, Cuba, Dr Jose Gomez Márquez, Honduras, Dr Robert Gutierrez, New York, Dr Ramon Castroviejo, New York, Dr Charles Pierre L. Mathé, San Francisco, Dr Arthur Steindler, Iowa City, Dr Joseph M Hill, Dr Alfred I Folsom, Dr Charles L Martin, Sol Halkman, Ph D, Dr John D Singleton, Dr Howard J

Scott, Dr John V Goode, all of Dallas, Texas, Dr Juan Carlos Oruggia, Montevideo, Uruguay, Spencer R Atkinson, D D S, Pasadena, Calif, Ben Robinson, D D S, Baltimore, Dr Julio Fazzio Calmet, Montevideo, Dr Ricerio V Canzani, Buenos Aires, Dr Melvin S Henderson, Rochester, Dr Alejandro Wallace, Los Angeles, Dr Rudolph Matas, New Orleans, Dr Manuel M Garcia, New Orleans, Dr Enrique J Cervantes, New York, Dr Alton Ochsner, New Orleans, Dr Oscar Mercier, Montreal, Canada, Dr Verne C Hunt, Los Angeles, and Carl Voegtlin, Ph D, Washington, D C. Dr Ochsner will represent the American Medical Association at the congress.

Government Services

Dr Foard Placed in Charge of Western Public Health District

Dr Fred T Foard, surgeon, U S Public Health Service, has been assigned as medical director for the Western district of the public health service, which includes the states of Idaho, Utah, New Mexico, Colorado and Texas, with central headquarters in Denver.

Civilian Health Good, Says Report

Statistics of the U S Public Health Service show that the lowest death rate on record, 10.3 per thousand, was recorded in 1942, according to a report released by the Office of War Information. The birth rate was 207 in 1942 as compared with 187 per thousand in 1941. The maternal mortality rate dropped for the thirteenth consecutive year to about three deaths per thousand live births in 1942. Infant mortality also continued to drop. For the first six months of 1943 however, statistics indicate slightly less favorable conditions as reflected by communicable disease reports and by estimated death rates. With the exception of meningococcal meningitis (cerebrospinal fever), poliomyelitis and the dysenteries, the incidence of communicable diseases reported to the public health service during the first half of 1943 is below or approximately the same as that for the corresponding period of 1942. Cerebrospinal meningitis, which began to increase during 1942 and developed into incipient epidemic proportions toward the end of the year, has remained at a high level so far this year in spite of a seasonal decline. Up to the week ended August 14 a total of 13,368 cases had been reported. This is a larger number of cases than has been reported for any entire year since 1914, when collection of these reports was begun. The largest number of cases for any year for that period was 10,551, reported in 1929. The incidence of poliomyelitis is above that of any year since 1934. The total number of cases this year, as of August 21 is 4,059 which compares with 1,505 for the same period last year and a five year median of 2,072 cases. In the week ended August 21, the last for which complete figures were available, the total was 747 cases, an increase of 201 cases over the report for the previous week. Chief centers of infantile paralysis are California, Kansas, Illinois and Texas, with cases also in Oklahoma, New York and Connecticut. There has been an increase of dysentery during the first half of the current year. About twice as many cases had been reported up to July 24 as were reported for the same period last year. This increase is probably due in part to the lack of sanitary precautions in eating establishments and carelessness among food handlers. Preliminary figures indicate a low rate in 1943 for typhoid. Up to July 24 only 2,424 cases had been reported in the United States as compared with 3,444 for the same period last year. While preliminary mortality figures through May of this year indicate a slightly less favorable death rate than last year, no significant increase has been recorded. The provisional annual death rate for the first five months of 1943 was 11.2 per thousand of population or 0.31 higher than the rate for the same period in 1942. The death rate for the entire year 1942 was only 10.3 per thousand of population, the lowest on record. The increase in the rate during 1943 apparently is due principally to the excess in death from cardiovascular diseases, although increases in the deaths from some of the childhood diseases and from the cerebrospinal fever have probably also been factors although less important numerically. According to the report, it is interesting to note that there has been no indication of increased mortality from respiratory tuberculosis in this country since the beginning of the war. In fact the death rate from this cause has been lower than in 1939 and 1940.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 10, 1943

British Medical Students Association

Formation of the British Medical Students Association means that the voice of the medical student is heard for the first time in medical affairs. At first the movement was supported by only a small group of students, but it grew quickly, and within a year the association was requested by the medical planning commission of the British Medical Association to submit a memorandum on medical education. It now has a membership of over eight thousand almost all the medical schools and teaching hospitals in the British Isles have joined. A congress of students, the first of its kind, was held in December and was attended by five hundred students from medical schools all over the country. A memorandum on medical education, based on evidence submitted by fifteen schools, was drawn up. Among its recommendations were the following: 1. Medical students should be drawn from all sections of the community without reference to financial means or sex. 2. They should have the opportunity of working within a university and not in isolated medical schools, to prevent too early dissociation from other students. 3. Newly qualified doctors should be compelled to serve a period of hospital appointment before license to practice is granted.

Another important memorandum, on student health, has been drawn up by the association. Various schemes have been tried in British universities, but none have proved satisfactory. All students, and particularly medical students, tend to live in unhealthy surroundings. The extension of university hostels and approved lodgings is regarded as the first step in improvement. Routine x-ray examination of the chest is also recommended. Since health is a problem that concerns all students, the British Medical Students Association is cooperating in the formation of this program with the National Union of Students and the British Dental Students Association. A course of eight lectures by eminent authorities on various aspects of the war has been arranged in London.

At nearly all the medical schools meetings have been held to discuss the Beveridge scheme, which on the whole is supported, though there is wide disagreement as to details. A resolution urging the government to implement the Beveridge principles without delay was carried by 34 votes to 3 at a committee meeting.

The Army Blood Transfusion Service

The Army Blood Transfusion Service has a panel of 320,000 donors. Of this number between 3,000 and 4,000 have made donations each week for some time. This service operates in an area covering practically the whole of the south of England. Major campaigns to enroll volunteers are conducted six times a year, but minor campaigns are in continuous operation in factories, villages and small towns in a definite cycle of visits. Donations are taken by fifteen mobile teams, each having a medical officer. At headquarters the blood group of each donor is ascertained and recorded. The blood of group O, from the "universal donor," is pooled and used to make fluid plasma, of which 58,932 pints have already been made for military use at home or overseas in temperate climates. For tropical and subtropical countries dried plasma with distilled water for reconstitution is supplied. Whole blood is exported to any theater of war within air distance from England, and blood banks are maintained in important civil and air force centers.

Large insulated boxes with ice inserts keep the blood at 4 C for eight hours. Overseas it is kept in cool mobile refrigerators and distributed to field transfusion units from the base unit. If whole blood remains unused after three or four weeks it is converted into plasma.

All transfusion fluids, including crystalloid solutions, are accompanied by administration apparatus in sterilized tins ready for immediate use. Sets for blood taking are also issued with supplies of dried serum for blood grouping. Special boxes of equipment are issued for the use of military hospitals, field ambulances, troop ships and air borne medical units, to which they are dropped by parachute.

The technical staff of the Army Blood Transfusion Service is under the direction of L. E. H. Whitby. It is drawn almost entirely from the laboratory staff of the Royal College of Surgeons and the Middlesex Hospital. It trains special transfusion units for service overseas and instructs all ranks of the Army Medical Corps in resuscitation work. The British army differs from all others in having a distinct transfusion service with its own source of supply and specially trained mobile resuscitation teams. In every theater of war there is a base transfusion unit, which, linked with the home service, is able to exploit local resources and thus supplement the supplies obtained from home.

New Zealand Immigration Admission of European War Orphans

In reply to the suggestion that war orphans should be received in New Zealand, Prime Minister Fraser replied that there could be no argument about the need for more population there. The government's first concern was the rehabilitation of the men fighting overseas, he indicated, but that did not preclude attention to immigration. New Zealand could take her share in helping the homeless children of the world—the government had already discussed with the Polish consul general the question of taking Polish children. Immigration questions would also be taken up with British authorities, the prime minister stated. Many British soldiers in North Africa have indicated their intention to go to New Zealand after the war, and New Zealand wishes as far as possible to keep the country British.

American Psychiatrists Entertained

Psychiatrists of the United States and Canadian forces in this country were entertained by the London County Council at Sutton Emergency Hospital. Short papers were read on Rehabilitation of the Neurotic (Dr Minski), Psychopathic Personalities (Colonel Petrie), Recognition of the Neurotic in the Services (Dr Slater) and Psychic Treatment in Psychiatry (Dr Sargent). A demonstration on the electroencephalogram was given by Dr Hill, a demonstration of electroconvulsive therapy by Dr Sands, and visits were made to the occupational workshops. Colonel Thompson and Colonel Van Nostrand returned thanks on behalf of the United States and Canadian psychiatrists.

Writing on Pigmented Skins

When a skin pencil is used on African natives—for instance to note the administration of morphine—the writing is almost invisible. The same applies to the darker races of India. The *Army Medical Department Bulletin* reports that an officer in West Africa has overcome the difficulty by means of a thick emulsion prepared from acacia and any white powder, such as zinc oxide, mixed in hot water. The emulsion can be conveniently kept in a half ounce bottle, from which it can be applied by means of a small pointed stick transfixing the cork.

The Work of the American Red Cross in Britain

Mr Norman H Davis, chairman of the American Red Cross, who has come here to confer with Mr Harvey Gibson, American Red Cross commissioner in this country, and with service leaders on future plans to meet conditions when the United States forces move into other areas has paid a tribute to the facilities provided for the American forces by various clubs and field and hospital organizations. American Red Cross activities cover operations in the Southwest Pacific, India, North Africa, Iceland and Alaska and will follow as quickly as possible in any new theater of war. In this war Red Cross activities have developed somewhat along new lines particularly in club and welfare work. In Britain eighty American clubs are already open and seventy others are being formed. They include service clubs which provide the equivalent of homes to Americans on leave in our cities and towns. Other clubs offer all these facilities except sleeping rooms and meals.

Another type of club is the clubmobile, or club on wheels, made from converted omnibuses. It carries American newspapers and magazines, writing materials, American doughnuts, coffee, cigarettes and chewing gum to men on duty in isolated camps and air bases. Each clubmobile is staffed by three American girls and gives performances of the latest phonograph records from loud speakers on the roof. Each is convertible into an ambulance to carry 10 stretcher cases.

To most American army hospitals are assigned welfare services to build up and sustain the morale of patients by providing wholesome relaxation and instruction in hobbies, arts and crafts. As to the Red Cross blood transfusion work, the surgeon general of the United States Army, who was in the Tunis campaign, told Mr Davis that as a result of the use of dried blood plasma the mortality of casualties had been reduced from 15 to 2.5 per cent. About 15,000 people are working for the American Red Cross in Britain; half of these are volunteers and the large majority are British.

Ophthalmologic Research at Oxford

The provision and equipment of laboratories, lecture rooms, a library and a museum for ophthalmic research at Oxford University is part of an ambitious scheme to be carried out in connection with the rebuilding of the Oxford Eye Hospital which will be undertaken at the end of the war. Salaries will be provided for full time and part time research workers, teachers and technicians. The costs of research looking toward the prevention of blindness, improved treatment of eye disease and promotion of a higher standard of visual function throughout the country will be defrayed. An important objective for the proposed department is the discovery of the safest antibacterial drugs for ophthalmic use. The extreme delicacy of the eye is the governing consideration as all the ordinary antiseptics are poisons and further investigation will need contributions not only from ophthalmologic but from bacteriologic, mycologic and chemical sources. The most promising substance found so far is penicillin, knowledge of which is derived largely from work done in an Oxford laboratory. Statistics show that the risk of failure of vision falls increasingly on those in middle life. In 1941, out of a total blind population of 74,000 in England and Wales, 63,000 were persons over the age of 40 years. The cost of the proposed scheme is estimated at \$1,000,000 for which an appeal is being made.

Library Difficulties After the War

In a letter to the *Lancet*, Mr C. C. Barnard, librarian of the London School of Hygiene and Tropical Medicine, states that after this war, even more than after the last, libraries will be faced with the problem of filling gaps in their sets of periodicals, not only because of their inability to obtain journals from enemy and enemy-occupied countries during the war but also because of losses at sea and destruction by air raids over this

country. To prevent an unseemly squabble by libraries for volumes limited in supply, he advocates decisions on a national scale by an impartial body on the allotment of volumes. This should form part of a much larger scheme whereby the present holdings of learned periodicals would be surveyed and the needs of research in the various centers of learning assessed, regard being paid to specialization in various institutions. Interchanges of stock could be arranged to insure complete sets in libraries where they are most needed. The obvious body to undertake this program is the Library Association.

Before the war two such schemes were being prepared—in the fields of German studies and of medicine. Only when this work has been completed will it be possible to compile a satisfactory union catalogue of periodicals in British libraries, which is much needed to supersede the present incomplete World List of Scientific Periodicals.

The Royal Society of Medicine in Wartime

Notwithstanding the war, the work of the Royal Society of Medicine goes on unimpaired though paper control has, as in the case of all periodicals, reduced the size of the printed proceedings and prevented the publication in them of important papers. Some, however, have appeared in the medical journals. In normal times these papers would have appeared both in the proceedings and in the journals. The membership of the society has reached the highest level ever attained, just over six thousand, and shows an increase of 50 per cent in the last fifteen years. The meetings of the society in the past year have been larger in number and better attended than ever. This is accounted for by the special interest in the topics of war medicine discussed and the large number of guests from the dominion and allied forces, to whom hospitality has been extended. By their contributions the discussions have been greatly enriched, especially by medical officers of the American and Canadian forces. Two distinguished physicians from the United States—Dr Thomas Parran and Dr Hugh Young—and Prof. T. A. Jurasz of Poland have been elected honorary fellows. Interallied conferences on military medicine have been arranged for the benefit of the fighting forces. For obvious reasons the discussions will take place in private. Committees of the society are dealing with the subject of interned medical aliens, education in otorhinolaryngology and in collaboration with the Royal Medico-Psychological Society, with the future of psychiatry in all its branches.

Marriages

WILLIAM HAMILTON WALKER, Memphis, Tenn., to Miss Anne Marie Byrne of Salem, Mass., at Quonset Point, R. I., in August.

WILLIAM HARRISON WILLIAMS JR., Charlotte, N. C., to Miss Helen Adeline Wheeler of Boston in Portland, Maine, July 3.

THOMAS ANDREW MURRAY III, to Miss Louise Young Workman, both of Charlotte, N. C., August 14.

CHARLES WAIT LLOYD, Rochester, N. Y., to Miss Eva Katherine Machen of Belmont, Mass., August 14.

WALLACE W. LINDAHL, Gainesville, Texas, to Miss Roberta Alice Collins of Coleridge, Neb., July 7.

CHARLES M. DRUECK JR., Chicago, to Miss Alice Lucille Finch of Iroquois, Ill., September 11.

PHILIP MERTZ Dupont, Pa., to Miss Rosalie Levkoff of Columbia, S. C., September 19.

ROBERT W. KING to Miss Dorothy Williamson Sisk, both of Fayetteville, N. C., July 13.

JOHN C. PIERSON to Mrs. Stella Todd Demorest, both of New York, September 23.

MATHEW GINSBURG, Toledo, Ohio, to Miss Hazel W. Culp of Los Angeles, July 31.

Deaths

Ira Solomon Wile ☉ New York, University of Pennsylvania Department of Medicine, Philadelphia, 1902, formerly lecturer in educational hygiene, New York University and in dietetics and nutrition in the department of dental hygiene at Columbia University, the New School for Social Research, New York University, Hunter College, Columbia University College of Physicians and Surgeons, College of the City of New York and Brooklyn College and for the American Social Hygiene Association, commissioner of education of the city of New York from 1912 to 1918, member of the New York Milk Commission, a founder of the New York school lunch system, Manhattanville Nursery, the National Round Table for Speech Improvement and the Association for Personality Training, of which he was president from 1929 to 1941, a director of the American Birth Control League, member of the advisory council of the Birth Control Clinical Research Bureau and the National Committee on Federal Legislation for Birth Control, member of the American Psychiatric Association, the National Committee for Mental Hygiene, International Committee for Mental Hygiene, American Public Health Association, American Speech Correction Association, Society for the Advancement of Education, American Child Health Association and the American Academy of Political and Social Science, member and in 1932 president of the American Orthopsychiatric Association, specialist certified by the American Board of Psychiatry and Neurology, Inc., associate in pediatrics and formerly assistant clinical pathologist in the dispensary at the Mount Sinai Hospital and clinical pathologist in the children's department of the Vanderbilt Clinic, hospital steward in the Army during the Spanish-American War, author and editor, aged 65, died, October 9, of coronary thrombosis.

Sidney A. Chalfant ☉ Pittsburgh, University of Pennsylvania Department of Medicine, Philadelphia, 1901, professor of clinical gynecology at the University of Pittsburgh School of Medicine, specialist certified by the American Board of Obstetrics and Gynecology, Inc., past president and secretary and for many years a member of the board of directors of the Allegheny County Medical Society, member of the American Gynecological Society, fellow and past president of the Pittsburgh Academy of Medicine, fellow of the American College of Surgeons, chief of the gynecologic department of Allegheny General Hospital, instrumental in founding and organizing the Woman's Hospital, where he was president of the board of directors and chairman of the hospital staff, a staff member of the Magee Hospital, formerly on the staffs of Columbia and St. Margaret Memorial hospitals, awarded the honorary degree of doctor of science from Geneva College, Beaver College, Pa., aged 68, died, August 31, of pneumonia.

George Herbert Taylor ☉ Maplewood, N. J., New York Homeopathic Medical College and Hospital, 1904, member of the American Academy of Orthopaedic Surgeons, fellow of the American College of Surgeons, attending orthopedic surgeon and chief of fracture service, Orange Memorial Hospital, attending orthopedic surgeon, East Orange General Hospital, Morristown Memorial Hospital and the Essex County Hospital for Contagious Diseases, Belleville, consulting orthopedic surgeon, Children's Country Home, Westfield, Betty Bacharach Home for Afflicted Children, Longport, Montclair Community Hospital, and the New Jersey Orthopaedic Hospital, Orange, aged 61, died, August 25, of heart disease.

David Yandell Keith ☉ Louisville, Ky., University of Louisville Medical Department, 1909, member of the American Roentgen Ray Society, American College of Radiology and the American Radium Society, specialist certified by the American Board of Radiology, Inc., on the staffs of the Louisville General, Methodist Deaconess, Kentucky Baptist and the Children's Free hospitals, instructor in surgery at his alma mater from 1909 to 1911, instructor in proctology from 1911 to 1915, instructor in roentgenology from 1916 to 1923, clinical instructor in radiology from 1923 to 1938 and since 1938 clinical associate in radiology, aged 61, died, July 12, of heart disease.

George Ernest Johnson ☉ Philadelphia, Medico-Chirurgical College of Philadelphia, 1904, assistant professor of laryngology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, chief of the division of communicable diseases for the city department of health from

1934 to 1942, on the visiting staff of the Philadelphia Hospital for Contagious Diseases, served on the staff of St. Agnes Hospital, aged 61, died, August 12, of coronary occlusion.

Henry Nathaniel Sisco ☉ Baltimore, George Washington University School of Medicine, Washington, D. C., 1909, member of the Washington State Medical Association, served during World War I, formerly associated with the Indian Service, had been health officer of an Indian reservation in Nespelem, Wash., served as medical superintendent of the Chilocco Indian School Hospital, Chilocco, Okla., the Clinton (Okla.) Indian Hospital, Salem Indian School Hospital, Chemawa, Ore., and the Washington (D. C.) Sanitarium, Takoma Park, Md., aged 72, died in the United States Marine Hospital, August 4, of retroperitoneal neuroblastoma.

Lewis Weimer Elias ☉ Asheville, N. C., Columbia University College of Physicians and Surgeons, New York, 1903, member and past president of the state board of medical examiners, past president of the Buncombe County Medical Society, served as secretary-treasurer of the North Carolina Pediatric Society, member of the Southern Medical Association, specialist certified by the American Board of Pediatrics, Inc., pediatrician to the Asheville Mission, Aston Park and Norburn hospitals, Asheville, and the Baltimore (N. C.) Hospital, aged 66, died, August 10, of coronary thrombosis.

John Joseph Finerty, Derby, N. Y., Niagara University Medical Department, Buffalo, 1888, at one time vice president of the Medical Society of the State of Pennsylvania, formerly brigadier general for the Pennsylvania National Guard, served on the staffs of the Charity Eye, Ear and Throat Hospital and the Sisters Hospital, aged 77, died in Buffalo, September 18, of arteriosclerosis.

Adrian William Frankow, West Bend, Wis., Marquette University School of Medicine, Milwaukee, 1934, member of the State Medical Society of Wisconsin, served on the staff of St. Joseph's Hospital, appointed a first lieutenant in the medical corps, Army of the United States, in May 1942 and began extended active duty in June 1942 at Fort George Wright, Wash., a flight surgeon, placed on the inactive list, June 16, 1943, aged 33, died in the Mayo Clinic, Rochester, Minn., August 10, of pulmonary edema.

Oliver Hubbard Gibbs, Waldron, Mich., Eclectic Medical Institute, Cincinnati, 1891, aged 84, died, August 15, of coronary occlusion and general arteriosclerosis.

Louis W. Grosse ☉ St. Louis, St. Louis University School of Medicine, 1906, served on the staffs of the Lutheran Hospital and Evangelical Deaconess Home and Hospital, aged 58, died, August 20, of heart disease.

George Jacob Gordon, Minneapolis, Jefferson Medical College of Philadelphia, 1900, formerly adjunct professor of therapeutics and instructor in clinical obstetrics at the Minneapolis College of Physicians and Surgeons, the medical department of Hamline University, a founder and for many years director of the Talmud Torah Hebrew School, aged 69, died in St. Mary's Hospital, July 26, of coronary thrombosis.

Andrew Fidelis Gugsell, Ferdinand, Ind., Kentucky School of Medicine, Louisville, 1907, member of the Indiana State Medical Association, at one time served as postmaster at Jasper, served during World War I, aged 67, died in the Stork Hospital, Huntingburg, August 9, of cerebral hemorrhage.

Emmette Marvin Guthrie, Thompson, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1905, member of the Medical Association of the State of Alabama, aged 60, died, July 8, of chronic myocarditis, arteriosclerosis and chronic pulmonary tuberculosis.

William Carleton Harris, Cincinnati, Miami Medical College, Cincinnati, 1897, member of the Ohio State Medical Association and the American Academy of Ophthalmology and Otolaryngology, on the staffs of the Deaconess and Jewish hospitals, aged 72, died, August 12, of heart block.

Gustave Hartman ☉ Lynn, Mass., Jefferson Medical College of Philadelphia, 1904, served during World War I, major in the medical reserve corps of the U. S. Army not on active duty, aged 66, on the staff of the Union Hospital where he died, August 1, of uremia.

James Francis Hatfield, Rossville, Ind., Medical College of Ohio, Cincinnati, 1897, aged 69, died, August 13, of carcinoma.

Manley Hewitt Haynes, Menahga, Minn., University of Minnesota Medical School, Minneapolis, 1920, served as health officer and deputy coroner, on the staff of the Wesley Hospital, Wadena, aged 54, died, August 8, of pneumonia.

Robert Francis Heatley † Toledo, Ohio, University of Michigan Medical School Ann Arbor, 1923, fellow of the American College of Surgeons, served during World War I member of the staffs of Lucas County and Women's and Children's hospitals, aged 47 secretary of the staff and director of the department of obstetrics and gynecology at the Mercy Hospital where he died, August 3 of Brunt's disease

Edmund Bowman Ilyus, Lancaster, Pa Jefferson Medical College of Philadelphia, 1882 aged 83, died, August 2, of senility

Edward Herman Katterhenry, Indianapolis Gross Medical College, Denver, 1897 a captain in the medical department at Camp Custer, Mich, and head of the urology department at the Walter Reed General Hospital, Washington, D C during World War I aged 69 died in the Veterans Administration Facility, Marion, Ind, August 8, of uremia

E H Kenimer, Bishop, Ga Atlanta Medical College 1897 county physician and chairman of the Selective Service Board, on the staff of St Mary's and General hospitals, Athens aged 70 died, July 8 of heart disease

Cyrus Kurtz, Paterson, N J University of Maryland School of Medicine, Baltimore, 1902 also a dentist aged 73, died in the Paterson General Hospital, July 23 of cerebral hemorrhage and arteriosclerosis

William T Loftin, Gore, Okla Gate City Medical College, Texarkana Ark, 1905, aged 78, died in Tulsa, July 23, of myocarditis

Charles Holder McArthur, Rome Ga Chicago College of Medicine and Surgery 1917 member of the Medical Association of Georgia on the staff of the McCall Hospital aged 47, died, August 2, of uremia and lung infection

James Foulhouse McCaleb, Carlisle, Miss, Medical Department of Tulane University of Louisiana New Orleans 1891 aged 76 died, July 25, of carcinoma of the intestine

William Nelson MacChesney Evanston Ill Northwestern University Medical School Chicago 1902 at one time on the staffs of the Wesley Memorial Hospital, Chicago, and St James Hospital, Chicago Heights aged 67, died in the Illinois Masonic Home, Sullivan, August 18 of Parkinson's disease.

Thomas E McGarity, Como Texas (licensed in Texas under the Act of 1907), member of the State Medical Association of Texas, served several terms as mayor of Como and as a member of the board of education of the public schools, aged 70 died, July 9, of heart disease

Charles White MacGuire, Toledo Ohio Toledo Medical College, 1898, also a pharmacist aged 69 died in Columbus, July 29, of heart disease.

Samuel O Marrs, Chickasha, Okla University of Tennessee Medical Department, Nashville, 1893 past president of the Grady County Medical Society formerly city and county superintendent of public health, at one time secretary of the U S Board of Pension Examiners examiner for the local draft board during World War I, served on the staff of the General Hospital, aged 76 died, August 6, of carcinoma of the liver

Homer Preston Marsh, Syracuse, N Y, University of the City of New York Medical Department 1891 formerly coroner of Fulton, Oswego County N Y, served on the staff of the Crouse-Irving Hospital, aged 76, died in St Joseph Hospital, July 29, of coronary thrombosis

George Walworth Mellon, New York, University of Pennsylvania School of Medicine, Philadelphia, 1913, had been decorated by Crown Prince Alexander of Serbia for his typhus preventive work among the Serbians served in France during World War I formerly consultant to the city board of health and on the staffs of the New York Skin and Cancer Hospital and the New York Post-Graduate Medical School and Hospital aged 53, died, August 7 of heart disease

Frank Waldo Merritt † Gary Ind College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1905 fellow of the American College of Surgeons for many years chief medical officer of the Carnegie Illinois Steel Corporation, served during World War I on the staffs of St Mary's Mercy and Methodist hospitals aged 61 died in his summer home in Miller, August 18, of heart disease

Walter Stevenson Moyer, Sayre Pa Temple University School of Medicine Philadelphia 1910 member of the Medical Society of the State of Pennsylvania aged 70 died July 18

of peritonitis with multiple abscesses due to diverticulitis of the colon

Parley Pratt Musser, Oakland, Calif, College of Physicians and Surgeons, Baltimore, 1907, at one time bacteriologist for the city of Oakland, aged 69, died, July 20, of cerebral thrombosis

John P Sellman, Washington Ind College of Physicians and Surgeons, Baltimore, 1896, served as medical examiner for the Baltimore and Ohio Railroad, aged 69, died, August 19 of uremia, pyelitis and cystitis

Charles S Shoaff, Volant, Pa, Keokuk (Iowa) Medical College 1895, aged 77, died in the Jameson Memorial Hospital, New Castle, July 13, of nephritis due to benign hypertrophy of the prostate

Frank Voshell Slaughter, Philadelphia Hahnemann Medical College and Hospital of Philadelphia, 1899, aged 78, died in the Women's Homeopathic Hospital, August 27, of heart disease

James Augustus Smith † Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1911, served during World War I, on the courtesy staffs of the Kensington Hospital for Women and the Hahnemann Hospital aged 55, died in the Presbyterian Hospital, August 11, of coronary occlusion

Carl Kennedy Struble, Loveland, Colo, Kansas City University of Physicians and Surgeons, Kansas City, Mo, 1919, aged 69, died in Fremont, Neb, July 30

Merle O Thoreson, South St Paul, Minn, University of Minnesota Medical School, Minneapolis, 1930 member of the Minnesota State Medical Association, member of the medical staff of Swift and Company on the staffs of St. Luke's, St Joseph's and Children's hospitals, St Paul aged 38 died July 17, of coronary occlusion and myocardial fibrosis

DIED WHILE IN MILITARY SERVICE

John Pierce Beeson † Lieutenant Colonel, M C U S Army, Kansas City Mo Washington University School of Medicine St. Louis, 1905, School for Flight Surgeons and the Air Service Pilot School, 1921, commissioned a captain in the medical corps of the U S Army in 1920, a major in 1929 and a lieutenant colonel in 1937, during World War I served in France as chief of the surgical staff of an evacuation hospital near Verdun, had been in command of the station hospital at Fort Hancock, N J, and a hospital at Salina, Kan, fellow of the American College of Surgeons, aged 59, died in Brownsville Texas, August 1, of coronary occlusion

John Beegan Byrne, Nyack N Y, Columbia University College of Physicians and Surgeons New York 1933, member of the Medical Society of the State of New York, diplomate of the National Board of Medical Examiners, at one time resident on the staff of the New York Reconstruction Home, West Haverstraw, captain in the medical corps, Army of the United States, aged 36, died in a station hospital at Newfoundland, August 10, of meningitis

Stewart Fulton, Cleveland, Rush Medical College, Chicago, 1934, formerly resident on the staff of the Fairview Hospital, served as medical missionary for the Presbyterian Board of Foreign Missions in India, commissioned a first lieutenant in the medical corps Army of the United States, May 23 1942 and assigned to the Air Transport Command in New York aged 37 died in the Asiatic area, August 25, of a skull fracture (circumstances unknown)

Lloyd P Gieringer, Toledo Ohio University of Cincinnati College of Medicine 1923 formerly a member of the Mercy Hospital commissioned a lieutenant commander in the medical corps of the U S Naval Reserve Oct 31 1942, stationed at the U S Naval Hospital, Newport R I, where he died, August 31 of bronchopneumonia aged 45

John Dendy McBrearty, Williamston S C Medical College of the State of South Carolina, Charleston, 1938 commissioned a first lieutenant in the medical reserve corps of the U S Army, Sept 29, 1941, and later a captain an aviation medical examiner attached to the antisubmarine command aged 29 died in an airplane accident near Earlton N Y, July 22

Correspondence

CENSORSHIP OF MEDICAL PERIODICALS

To the Editor—In THE JOURNAL of May 8, which has just now come to hand, I have read with interest and sympathy the communication of Dr Houssay protesting against the censorship of medical articles. We in India also have been sufferers in this respect. Although, as far as I know, no issue of THE JOURNAL coming to India has until now been censored, since the nonarrival of certain numbers has been ascribed naturally to enemy action, nevertheless one number of the *American Journal of the Medical Sciences* did arrive badly blotted and cut up. Also the April 1943 number of the *Surgical Clinics of North America* has failed entirely to arrive and its publishers have written to say that the fault is censorship in this case. From advertisements appearing elsewhere, I understand that the April issue of the *Surgical Clinics of North America* had a symposium on war surgery. It can only be concluded that American censorship is keeping information from this country which might be of value in India's war effort. It is difficult to understand an attitude that will interfere with the dissemination of medical knowledge under any circumstances. Still less understandable is the keeping of such information from nations which are America's allies in the present struggle.

L B CARRUTHERS, M D
Miraj Christian Medical School,
Miraj, S M C

"CONTACT, CONTACT-INFECTIVE AND INFECTIVE-ALLERGIC DERMATITIS"

To the Editor—I should like to make a few comments on the article by Drs Stokes, Lee and Johnson entitled "Contact, Contact-Infective and Infective-Allergic Dermatitis" appearing in THE JOURNAL, September 25.

A bilateral chronic and recurrent dermatitis of the hands of a physician should be considered to be due to a rubber glove sensitivity until proved otherwise. Dr Stokes neglected to point out an occasionally important factor—that of localized sensitivity. Localized or regional epidermal sensitivity has long been recognized by dermatologists. An example of this is nail polish dermatitis of the eyelids and face, where patch tests of nail polish may be negative on the arms or back yet be strongly positive when applied to the forehead or side of the neck. In the same manner patch tests of a suspected rubber glove actually causing a dermatitis of the hands may yield a negative test when performed on the back or arm. For this reason rubber glove dermatitis of the hands has been missed in some physicians and the dermatitis considered to be soap and water dermatitis or an eczematoid dermatophytid. The latter may be the case especially when a coexisting dermatitis of the feet due to rubber or rubber cement of the shoes is considered to be due to dermatophytosis.

I wish to recommend strongly that every physician with a suspected rubber glove dermatitis be tested on the hands. This may be done by patch tests, but I have found the simplest method to be that of wearing a cotton glove with a small hole cut out of the back under the rubber glove. If the patient is sensitive, a small patch of dermatitis corresponding to the hole in the back of the cotton glove will appear.

The wearing of Neoprene or rubber gloves to which the patient is not sensitive may not end his troubles, for he may come into contact with innumerable other rubber articles. I

have one patient, a woman, who, while working in the processing department of a synthetic rubber plant, became sensitive to the synthetic rubber with a resulting dermatitis of the hands and forearms. After recovery she obtained work as a secretary. A short time thereafter a troublesome dermatitis appeared on her hands. Patch tests of a rubber typewriter eraser, rubber typewriter key pads, a rubber covered adjustment knob on the typewriter, a rubber finger protector and the rubber telephone receiver all gave strongly positive reactions.

C RUSSELL ANDERSON, M D, Los Angeles

DOCTORS AS "SOFT TOUCH" FOR NARCOTIC ADDICTS

To the Editor—Because of the shortage of narcotic drugs in the illicit traffic, drug addicts are calling on members of the medical profession looking for a "soft touch." This is the addict's term for a doctor who will write a narcotic prescription after listening to a plausible tale. Hundreds of such cases are coming to our attention.

A drug addict goes into a doctor's office and simulates a bad cough. He tells the doctor that the only thing that will help him is a drug, the name of which he has on a slip of paper. He shows the doctor this slip of paper, on which the word Dilaudid is written. He takes a chance that the doctor is unaware of the fact that this drug is a derivative of morphine. It is surprising how many doctors follow the addict's suggestion and write a prescription for Dilaudid.

In another racket the physician is imposed on in a rather unusual manner and generally writes morphine prescriptions for quantities ranging from thirty to eighty $\frac{1}{4}$ gram tablets. The addict calls on a physician and says his wife is in the care of a nurse and enroute by train to join him, that his wife is in a very serious physical condition, necessitating the use of morphine. He says that the doctor has been highly recommended and that he wants him to take care of his wife on her arrival, place her in a hospital and perform an operation if necessary. The addict offers a retainer. He then alleges that his wife has just stopped off in a nearby city and is unable to proceed by train until a supply of morphine is obtained, that the nurse telephoned him that his wife's supply is exhausted. The physician writes a prescription for morphine, which the addict claims he will send to his wife by air mail. In some cases the doctor has been taken in by this story to the extent that he has retained a room in a hospital for a week until he realizes that he has been victimized.

When addicts find a notice of a doctor's death in an obituary column they sometimes call on the bereaved widow on the day following the death alleging that they are narcotic inspectors and have come to take charge of the doctor's morphine stock.

Pharmacists are being deluged with forged narcotic prescriptions. Blank pads are stolen from doctors' desks by addicts. Several times we have referred to numerous thefts of physicians' bags containing narcotics. A doctor's bag left in a parked automobile near a hospital is invariably stolen by a drug addict.

Physicians are being imposed on with increased frequency. I know they are extremely busy during this emergency. They should be warned to be on guard when a stranger tries to induce them to write a narcotic prescription. Many of the drug addicts today tell us that they are obtaining narcotics to satisfy their craving by going to various physicians and simulating some serious physical ailment.

H J ANSLINGER, Washington, D C
Commissioner of Narcotics

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Oct 23 page 504

BOARDS OF MEDICAL EXAMINERS

- ALABAMA Montgomery June 20 22 Sec Dr B F Austin 519 Dexter Ave Montgomery
- ARKANSAS * Medical Nov 3-4 Sec Dr D L Owens Harrison
Edictic Little Rock Nov 4 Sec C H Young 1415 Main St, Little Rock
- CONNECTICUT * Written Hartford Nov 9 10 Endorsement New Haven Nov 23 Sec to the Board Dr Creighton Barker 258 Church St New Haven, Homeopathic Derby Nov 9 Sec Dr Joseph H Evans 1488 Chapel St New Haven
- DELAWARE * Written Dover Jan 11 13 Endorsement Dover Jan 18 Sec. Medical Council of Delaware Dr Joseph S McDaniel 229 S State St Dover
- DISTRICT OF COLUMBIA * Washington Nov 8 9 Sec, Commission on Licensure Dr G C. Rubland 6150 E. Municipal Bldg Washington
- FLORIDA Jacksonville Nov 22 23 Sec Dr William M Rowlett Box 786 Tampa
- GEORGIA October or November Sec State Examining Boards Mr R. C. Coleman, 111 State Capitol Atlanta
- IDAHO Boise Jan 11 Dir Bureau of Occupational Licenses Mrs Lela D Painter 355 State Capitol Bldg Boise
- IOWA * Iowa City Dec. 27 29 Dir Division of Licensure and Registration, Mr H W Grefe Capitol Bldg Des Moines
- KANSAS Kansas City Feb 23 Sec Dr J F Hassig 905 N Seventh St. Kansas City
- KENTUCKY Louisville, Dec. 6-8 Sec Dr Philip E Blackerby 620 S Third St Louisville
- LOUISIANA New Orleans Dec 21 23 Sec Dr R B Harrison 1507 Hibernia Bank Bldg New Orleans
- MAINE Portland Nov 9 10 Sec Dr Adam P Leighton 192 State St Portland
- MARYLAND Medical Baltimore Dec. 14 17 Sec Dr J T O Mara 1215 Cathedral St Baltimore, Homeopathic Baltimore Dec 14 15 Sec., Dr J A. Evans 612 W 40th St Baltimore
- MASSACHUSETTS Boston, Nov 16-19 Sec Board of Registration in Medicine, Dr H Q Gallupe 413 F State House Boston
- MISSOURI St. Louis Nov 15 17 Sec State Board of Health Dr James Stewart State Capitol Bldg Jefferson City
- NEVADA Endorsement Carson City Nov 1 Sec Dr G H Ross 215 Carson St Carson City
- NEW HAMPSHIRE Concord March 9 10 Sec Board of Registration in Medicine, Dr D G Smith State House Concord
- NORTH CAROLINA December Sec Dr W D James Hamlet
- NORTH DAKOTA Grand Forks Jan 4 7 Sec Dr G M Williamson, 4 1/2 S Third St Grand Forks
- OHIO * Written Columbus Dec 13 15 Sec Dr H M Platter 21 W Broad St Columbus
- OKLAHOMA * Oklahoma City Dec. 27 29 Sec Dr J D Osborn Jr Frederick
- PENNSYLVANIA Philadelphia and Pittsburgh January Act Sec Bureau of Professional Licensing Department of Public Instruction Mrs. Marguerite G Steiner 358 Education Bldg Harrisburg
- SOUTH CAROLINA Charleston Dec. 20 22 Sec Dr N B Heyward 1329 Blanding St. Columbia
- SOUTH DAKOTA * Pierre Jan 18 19 Dir Medical Licensure State Board of Health Dr Gilbert Cottam Pierre
- VERMONT Burlington Dec 16-18 Sec Dr F J Lawliss Richford
- VIRGINIA Richmond Dec 14 17 Sec Dr J W Preston 30 1/2 Franklin Road Roanoke
- WISCONSIN * Madison Dec. 13 15 Sec Dr C A. Dawson Tremont Bldg River Falls
- * Basic Science Certificate required
- #### BOARDS OF EXAMINERS IN THE BASIC SCIENCES
- FLORIDA DeLand Nov 6 Sec Dr John F Conn John B Stetson University DeLand
- NEW MEXICO Feb 7 Sec Miss Pia Joerger State Capitol Santa Fe
- OKLAHOMA Oklahoma City Nov 29 Sec Dr J D Osborn Jr Frederick
- RHODE ISLAND Providence Nov 17 Chief Division of Examiners Mr Thomas B Casey 366 State Office Building Providence
- SOUTH DAKOTA Vermillion December Sec. Dr G M Evans Yankton
- TENNESSEE Nashville and Memphis Dec 10-11 Sec Dr O W Hlyman 874 Union Ave Memphis
- WISCONSIN Milwaukee Dec 4 Sec. Prof Robert N Bauer 152 W Wisconsin Ave Milwaukee

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Legality of the Corporate Practice of Medicine—The Bartron Clinic was organized in 1929 as a corporation for profit and in general, it operated in South Dakota a hospital and clinic and supplied medical and surgical services and necessary drugs to persons availing themselves of its services. In carrying on its activities it acted, to all practical purposes, only through licensed physicians and surgeons and nurses in its employ. Each employee seemed to have confined his or her activities to fields in which he or she was licensed to practice. The corporation had 750 shares of capital stock, all but 28 of which were owned by duly licensed physicians connected with the activities of the corporation. Admittedly the corporation was not licensed to practice medicine and surgery nor to operate a pharmacy in South Dakota. In 1933 and in succeeding years until 1938, when it ceased to do business, the corporation contracted on an annual basis with Codington County, S D, to furnish necessary hospitalization, medical and hospital services and medicine to the poor of the county for whom it was the duty of the county to provide. Subsequent to the time when the corporation ceased to do business three cases involving the contracts between the corporation and the county were instituted. In one case a claim was filed with the county commissioners for compensation for medicines supplied to county indigents. Another case originated as a claim for the recovery of compensation for medical and surgical services rendered by the corporation. The third case originated as an action by the county to recover monies paid from 1933 on to the corporation for medical and surgical services and medicines furnished to the county indigents by the corporation. The judgments in the lower court in these cases were adverse to the corporation. On appeal the Supreme Court of South Dakota disposed in a single opinion of the issues presented in the 3 cases.

To sustain the judgments of the trial court the county contended first, that under the medical practice act of South Dakota the corporate practice of medicine was illegal and a corporation could neither recover nor retain compensation for acts in violation of that act. In the exercise of the police powers of the state said the Supreme Court, the legislature can prohibit corporations from engaging in the business of supplying for gain the services of licensed physicians. The question here is whether or not the South Dakota medical practice act evidences an intent on the part of the legislature to do so. Section 7717, Compiled Laws 1919 (a section of the medical practice act), provides a penalty for any person who shall practice medicine in this state without having obtained a license. Assigning to the word 'practice' the broad signification of common usage and applying also the statutory rule that 'person' also includes a corporation the corporation, functioning through licensed physician employees acting within the scope of their authorized powers has practiced medicine and surgery in apparent violation of the act unless a different legislative intent is plainly revealed elsewhere in the act. The most cursory analysis of the medical practice act reveals that it was motivated by a purpose to bring a high standard of character and competence to the diagnosis and treatment of human ailments and to prevent the quack and the unfit from ministering unto the ills of mankind. To accomplish these purposes a system of licensure was set up, based on personal qualifications including age, character schooling training and professional conduct, and a penal provision was added to the act to deter the unfit from treating patients. It will be further noted that throughout the act the legislature has dealt with the functions of natural persons and has ignored their legal relationships. Although the act by the power it grants in sections

7710 and 7711, *ibid*, to revoke a license to practice, seeks to regulate the practice of licentiates by stating as a cause for revocation "unprofessional conduct" and enumerating certain types of conduct that are embraced in the term, it is significant that there is not there included within such an enumeration of prohibited conduct practice for gain as the employee of an unlicensed individual or corporation. The conclusion seemed irresistible to the court that by the medical practice act the legislature intended to prevent unlicensed persons from the actual diagnosis and treatment of human ills but did not intend to prevent unlicensed persons from engaging in the business of supplying the services of licensed practitioners. The prevention of corporate practice, the court accordingly held, was not in the contemplation of the legislature when it enacted the medical practice act, and the corporation here involved, in contracting with the county, did not bargain to do that which is prohibited by the medical practice act.

To sustain the judgments adverse to the corporation, the county next contended that the practice of medicine by a corporation through the agency of employees who are licensed to practice medicine is illegal because it is against public policy or public interest and a corporation so practicing is not entitled to recover or retain compensation for its illegal acts. Public policy, said the court, is that principle of law which holds that

A person can lawfully do that which has a tendency to be
as to the public or to be against the public good

S 563 When conduct opposed to the public interest
be the subject of a bargain, the courts ordinarily refuse
to accord a party thereto a remedy predicated thereon. Restatement, Law of Contracts, sec 598. The subject of the practice of the learned professions by a corporation has been under consideration by the courts in a variety of actions and proceed-

s involving the practice of law, dentistry and medicine. See citations in 73 A L R 1327 and 103 A L R 1240. While
sion has rarely turned on the naked issue of public policy, those courts, by dictum at least, indicate a current of opinion, to which there are but few dissentients, that the corporate practice of the learned professions contravenes the public interest and is contrary to public policy. After discussing the variety of reasons assigned therefor, the court concluded that the corporate practice of any of the learned professions of law, medicine or dentistry would tend to debase those professions and that corporate practice would have a tendency to blight the character or lower the standards of professional practice and would be in contravention to the public aspirations so clearly reflected in the licensing statutes, which, with their emphasis on character and professional conduct on the part of licentiates, evidence a fixed public desire not only to foster but to develop and reinforce the basic attributes of the professional servants of the public. The court was of the opinion that the practice of the learned professions by a corporation organized for profit, even though it functioned through duly licensed physician employees, tended to debase the profession and consequently was in contravention of the public interest and was against public policy. The contracts, the court held, between the corporation and the county with respect to the rendering of medical and surgical services were illegal and the corporation can recover nothing for the services it rendered under those contracts.

The court next considered the legality of the contracts between the corporation and the county under which the corporation undertook to supply medicines and drugs to the county poor. The corporation was not licensed to practice pharmacy, but the medicines involved were prescribed by physician employees of the corporation in the course of the practice of medicine. The pharmacy practice act provides that nothing therein contained shall apply to the business of any physician or prevent him from supplying to his patients such articles as may seem to him proper. Session Laws, 1933, chapter 163. The pharmacy practice act, said the court, clearly intended to

exclude the practice of medicine from its regulatory effects. However, while thus removing the subject matter of these contracts from the scope of the pharmacy practice act, the act did not authorize the sale of medicines by a physician in any other manner than as an incident of the practice of his profession. Medication is but an integral part of the services a physician performs in treating human ailments, and the right to furnish medicine rests on the right to treat disease. It follows then, that, if it is against public policy for the corporation to engage in the practice of medicine, all of the incidents of that practice by the corporation, including medication, are contrary to public policy. The court accordingly held that that contract between the corporation and the county under which the corporation undertook to supply medicines to the county poor was illegal and that the corporation could recover nothing for its acts thereunder.

The court next considered the right of the county to recover sums previously paid to the corporation for medical and surgical services and medicines supplied to the county by the corporation. The county, said the court, while it seeks to recover the payments made to the corporation for those services and supplies, endeavors to retain the benefit of the valuable professional services and medicines it has received. It predicates its right to a refund of such payments on the theory that the bargains under which such payments were made were against public policy. It contends that it may appropriate these benefits and recover its payments. Obviously, the claim of the county is inequitable. Manifestly, justice will not be done if the county is permitted to recover its payments and retain the valuable benefits it received under the illegal contract. Had it not received the benefits of the services of the duly licensed employees of the corporation it would have been compelled to expend public funds for like services elsewhere. In procuring the needed services public policy was violated. The subject matter of the contract was not vicious in itself, and no moral turpitude was involved. The public interest is adequately and effectively protected by the obligations of a judicial policy under which the courts refuse to lend themselves to that which is against public interest. Considerations based on natural justice may be permitted to mold the judgment in this particular case without withdrawing any public safeguard or striking down any provision adopted to protect the county or its taxpayers. In our opinion, no circumstance warrants or supports a contention that, according to the ties of natural justice or for reasons based on public policy, the corporation should be obligated under the circumstances to refund to the county the monies paid to the corporation for valuable services and supplies rendered to the county. The court accordingly reversed the judgment of the trial court and held, in effect, that the corporation might retain the monies paid to it by the county — *Bartron v Codrington County (two cases) and Codrington County v Bartron (Bartron, Intervener)*, 2 N W (2d) 337, (S D, 1942).

Society Proceedings

COMING MEETINGS

American Society of Anesthetists, New York Dec 9 Dr McKinnie L. Phelps, 745 Fifth Ave New York 22 Acting Secretary
Central Society for Chemical Research, Chicago, Nov 5 Dr Carl V Moore, 602 South Euclid Ave, St Louis Secretary
Pacific Coast Society of Obstetrics and Gynecology San Francisco Nov 45 Dr T Floyd Bell, 431 Thirtieth St Oakland, Calif Secretary
Radiological Society of North America, Chicago Nov 29 Dec 3 Dr Donald S Childs, 607 Medical Arts Bldg Syracuse, N Y, Secretary
Seaboard Medical Association, Richmond Va Nov 30 Dec 2 Dr Clarence P Jones 3117 West Avenue Newport News Va, Secretary
Southern Surgical Association, New Orleans Dec 79 Dr Alton Ochsner 1430 Tulane Ave, New Orleans Secretary
Southern Medical Association, Cincinnati November 16-18 Mr C. P Loran Empire Building, Birmingham Alabama, Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore 13:383-440 (Aug) 1943

- Cephalin Cholesterol Flocculation Test in Liver Disease K Y Yardeni and B J Weisband—p 383
- *Transfusion Therapy of Acute Hemolytic Anemia of Newborn A S Wiener and I B Wexler—p 393
- Cerebral Injuries by Mechanical Violence S A Levinson—p 402
- Thallium Poisoning. III. Clinical Toxicology of Thallium A O Gettler and L Weiss—p 422

Transfusion in Acute Hemolytic Anemia of the Newborn.—Wiener and Wexler state that in the typical case of acute hemolytic anemia of the newborn the mother is Rh negative, the father is Rh positive and the fetus is Rh positive, the latter having inherited the factor from the father. Owing perhaps to some defect in the placenta, some of the fetal blood escapes into the maternal circulation and in sensitive mothers this stimulates the production of anti Rh isoantibodies. Since the normal placenta is permeable to antibodies, the anti Rh isoantibodies then filter back through the placenta into the fetal circulation and give rise to the disease. In the past, infants with acute hemolytic anemia were treated by repeated transfusions with varying results. The theory of Levine et al makes possible a more rational transfusion therapy. Whole maternal blood should not be used because in this way additional isoantibodies may be transferred to the infant and thus prolong the disease. For the same reason the baby should not be permitted to nurse, as antibodies may be transferred through the colostrum and milk. Also the father or any Rh positive donor should not be used, since the erythrocytes of such donors are susceptible to the action of the anti Rh antibodies. The most suitable donor is a normal Rh negative individual, because his cells are not sensitive to the action of the antibodies and his serum contains no anti Rh isoantibodies. The authors describe 8 cases of acute hemolytic anemia of the newborn recently treated by them. The disease is a treacherous one in that the baby may appear normal at birth and yet develop an abrupt hemolytic crisis which may cause death from anoxemia in a short time. As soon as the diagnosis is made or even suspected, arrangements should be made for immediate transfusion with Rh negative blood. Only intravenous transfusions are effective. Though transfusions in infants are technically difficult, in trained hands the procedure is carried out with ease with the aid of a small, short bevel 22 gage needle, using a scalp vein. In infants whose scalp veins are poorly developed or concealed by edema a suitable vein can as a rule be found by making an incision anterior and superior to the medial malleolus or by incising the antecubital fossa. The authors mention atypical cases due to sensitization to factors other than Rh or due to multiple sensitization. They suggest transfusion with washed mother's erythrocytes suspended in compatible plasma.

American Journal of Hygiene, Baltimore 38 1-112 (July) 1943

- Statistical Significance of Negative Stool Examination in Diagnosis of Amebiasis W G Sawitz and R J Hammerstrom—p 1
- Past Hospital Experience of Surviving Population Eastern Health District Baltimore 1926-1935 Clara E. Council—p 8
- Epidemiology of Scarlet Fever F F Schwenker J H Janney and J E Gordon—p 27
- Role of Intestinal Phase of Trichina Infection in Establishment of Immunity to Retention H Roth—p 99

American Journal of Medical Sciences, Philadelphia 206 141-280 (Aug) 1943

- *Studies on Transmissibility of Malaria by Plasma Transfusions E L Lozner and L R Newhouser—p 141
- Action of Specific Stimulators on Hemopoietic System F R Miller and D L Turner—p 146
- Sickling Trait in White Adult Associated with Hemolytic Anemia Endocarditis and Malignancy L Greenwald, J B Spielholz and J Litwinski—p 158
- Maintenance of Sedimentation Rate as Test for Malignant Disease L Apter, E Hull and C C Adams—p 168
- *Prognosis of Untreated Patent Ductus Arteriosus and Results of Surgical Intervention Clinical Series of 50 Cases and Analysis of 139 Operations M J Shapiro and A Keys—p 174
- *Clinical Significance of Hyperventilation Role of Hyperventilation in Production, Diagnosis and Treatment of Certain Anxiety Symptoms E A Stead Jr and J V Warren—p 183
- Modified Christie Method for Residual Air Measurements R A Izzo and H Chiodi—p 190
- Diabetes and Weather W F Petersen—p 197
- Preclinical Genitourinary Tuberculosis G E Kenny S E Cohen and L Bauer—p 204
- *Studies on 2 Sulfanilamide 4 Methyl Pyrimidine (Sulfamerazine Sulfamethyliazine) in Man. III. Treatment of Meningococcal Meningitis W I Geffer S B Rose, A H Domm and H F Flippin—p 211
- *Id. IV. Treatment of Pneumococcal Pneumonia H F Flippin W I Geffer A H Domm and J H Clark—p 216
- Tissue Culture Studies on Cytotoxicity of Bactericidal Agents. III. Cytotoxic and Antibacterial Activity of Gramicidin and Penicillin Comparison with Other Germicides W E Herrell and Dorothy Heilman—p 221
- Protruded Intervertebral Disk and Hypertrophied Ligamentum Flavum Criteria for Diagnosis and Indications for Operation, with Analysis of 50 Surgically Treated Cases J C Yaskin and A S Tornay—p 227
- Effect of Glucose Administration in Diabetic Acidosis H F Root and T M Carpenter—p 234
- Correlation of Intravenous Hippuric Acid Test of Liver Function with Body Size M M Scurry and H Field Jr—p 243
- Comparison of Techniques for Differential Counting of Bone Marrow Cells (Guinea Pig) R D Epstein and Edna H Tompkins—p 249
- Ophthalmology Toxic Effects of Sulfonamides on Eyes H P Wagener—p 261

Transmissibility of Malaria by Plasma Transfusions.—Lozner and Newhouser report the results of thirty-five administrations of plasma prepared from donors with active malaria and preserved by different techniques for varying lengths of time. The donors were patients with active therapeutic quartan and estivoautumnal malaria. The 35 recipients were patients with dementia paralytica or other central nervous system disease in which malaria was either indicated or not contraindicated. No transmission of malaria was observed in twenty administrations of thawed plasma which had been "shell" frozen in a solidified carbon dioxide-alcohol bath. In three administrations of restored plasma which had been dried from the frozen state no transmission took place. In two administrations of plasma preserved in the liquid state for one day there was one definite transmission and one probable transmission. In five administrations of plasma preserved in the liquid state for one week there was one doubtful transmission. In five administrations of plasma preserved in the liquid state for two weeks no transmissions were recorded. The likelihood of transmission of malaria by any plasma program regardless of type of preservation used is practically nonexistent.

Patent Ductus Arteriosus.—Shapiro and Keys investigated the longevity and cause of death in untreated and surgically treated patients with patent ductus arteriosus. Diagnosis of patent ductus arteriosus can be made with much certainty. The great majority of patients with this defect suffer no serious disability or restriction of activity during most of their lives but their life expectancy is greatly shortened by the defect. Ligation of the uninfected ductus can be made with a mortality of less than 10 per cent. Ligation of the ductus in the presence of subacute bacterial endarteritis offers an even chance of survival in the face of practically certain death without ligation. The danger of development of subacute bacterial endarteritis after successful ligation cannot be properly estimated. Six case histories are cited which illustrate arguments for and against ligation. An analysis is presented of the results of one hundred and forty operations for ligation of the duct. The majority of patients with patency of the ductus arteriosus should be submitted to ligation after careful clinical studies have been made on them. Ligation should be attempted immediately if subacute bacterial endarteritis develops. Ten patients with uninfected patent ductus arteriosus have been operated on.

by Wangenstein at the University of Minnesota Hospital, the last 8 cases with complete success. None have manifested a recurrence of signs indicating recanalization.

Clinical Significance of Hyperventilation—According to Stead and Warren, respiration is controlled by both reflex and chemical mechanisms. Afferent stimuli from any organ in the body or from an emotional content of thought may cause the pulmonary ventilation to be increased beyond the level required by the body metabolism. This reflex increase in respiration furnishes the physiologic basis for many of the symptoms of the psychoneurotic patient. The patient may be conscious of the hyperventilation and complain primarily of dyspnea or he may complain of any of the resultant symptoms, not being aware of the increased pulmonary ventilation. The authors give several illustrative case reports. Voluntary hyperventilation in normal subjects produces a disturbance in cerebral metabolism. Usually faintness or giddiness is followed by numbness and tingling about the mouth and extremities, the hands become cold, and if the patient is standing he may faint. Prolonged hyperventilation may produce symptoms of tetany. Any of the cerebral symptoms produced by voluntary hyperventilation may appear in the anxious patient who unknowingly hyperventilates. Production of these symptoms by voluntary overbreathing not only is of diagnostic aid but is useful in demonstrating to the patient that his symptoms have a physiologic rather than a pathologic basis. At times the hyperventilation itself may be noted by the patient and may appear as a symptom, particularly in patients with heart disease without congestive failure or in patients who fear heart disease. Observation of the effects of voluntary hyperventilation should be a routine procedure in the examination of (1) patients complaining of fainting, giddiness or a far away feeling and (2) patients with breathlessness, particularly those with heart disease without evidence of congestive failure.

Sulfamerazine in Meningococcal Meningitis—Sulfamerazine is one of several methyl homologues of sulfadiazine. Geffer and his associates used sulfamerazine for meningococcal meningitis during an epidemic of that disease in Philadelphia in the past winter. They report observations on 45 cases. The initial dose was always given intravenously as sulfamerazine sodium (5 per cent solution in sterile distilled water), adults receiving 3 Gm and children 1 to 2 Gm. This dose was immediately followed by sulfamerazine orally, adults receiving 1 Gm every four hours and children receiving 0.25 Gm to 1 Gm every six hours. Delirious or comatose patients were given the drug by nasal tube until they were capable of taking medication by mouth. Sulfamerazine was continued until the patient appeared entirely well clinically. In the successfully treated group the average total dose of the drug for adults was 56.4 Gm, given over an average period of 9.5 days, the children received an average total dose of 19.3 Gm over an average period of 8.6 days. Five of the patients were given intravenous antimeningococcus serum in addition to sulfamerazine. Determinations of the amount of free drug in the blood were made at frequent intervals. Three deaths occurred in this series, a mortality of 6.7 per cent. This is to be compared with the 57.5 per cent mortality occurring in 40 cases of this disease at the Philadelphia General Hospital during 1935, 1936 and 1937, and with the 40 per cent in 50 cases reported in 1942. The results also compare favorably with those in which sulfadiazine was employed (12.5 per cent mortality). Clinical improvement with return of mental clarity occurred in 70 per cent of the patients within forty-eight hours. The average time observed for the return to normal temperature was 5.2 days. Toxic reactions attributable to sulfamerazine, occurring in each instance after the fifth day of treatment, were noted in 11 patients.

Sulfamerazine in Pneumococcal Pneumonia—Flippin and his collaborators compare the response to sulfamerazine of 80 pneumonia patients with that of a control series of 80 adult patients treated with sulfadiazine. Mortality in the two groups showed no significant difference (sulfamerazine 7.5 per cent, sulfadiazine 10 per cent). Sulfamerazine tended to lower the temperature somewhat more rapidly than did sulfadiazine, however, the duration of chemotherapy and the incidence of

complications were essentially the same for the two groups. The incidence of toxic reactions was low and comparable for both sulfamerazine and sulfadiazine. No serious reactions were encountered with either drug. The fact that toxic reactions were less frequent among these pneumonia patients than among those receiving sulfamerazine for meningitis is explained by the fact that medication was of shorter duration. The group treated with sulfamerazine showed higher plasma concentration of free drug than did the group receiving larger or equivalent amounts of sulfadiazine.

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Rickettsial Vaccine as Antigen in Complement Fixation Test—According to Reynolds and Pollard the Weil-Felix reaction lacks specificity in the diagnosis of rickettsial infections, while the complement fixation test is rather specific in differentiating them. The complement fixation test uses antigens prepared from infected chick embryos. The commercially prepared typhus vaccine is similarly manufactured from infected chick embryos. The authors found that a commercially processed typhus vaccine is satisfactory for fixing complement with epidemic typhus antiserum. Its specificity was supported by negative results with the following heterologous specific antisera: Rocky Mountain spotted fever rickettsia, *Proteus* OX 19, *Eberthella typhosa*, *Salmonella typhi* murium, *Salmonella paratyphi*, *Salmonella schottmüller*, *Salmonella pullorum*, *Salmonella enteritidis*, *Salmonella paratyphi enteritidis*, *Salmonella abortus equinus*, *Pasteurella tularensis*, *Vibrio comma*, *Brucella abortus*, *Brucella melitensis*, *Trypanosoma equiperdum* and *Trypanosoma cruzi*. Of 89 positive Wassermann and Kahn serums tested one induced a 3 plus fixation with both the commercial purified antigen and the typhus vaccine. This one case gave a history suggestive of a typhus like disease several years prior to the test. Thirty two persons were given three subcutaneous injections of commercially prepared typhus vaccine of 1 cc each at weekly intervals. On the twelfth day following the last inoculation, blood serums were collected from all of them and tested with both antigens. None demonstrated evidence of complement fixing bodies for typhus. Apparently the chick embryo menstruum in which the Rickettsiae were growing failed to induce homologous complement fixing bodies in persons injected with it. The absence of complement fixing antibodies does not necessarily imply a lack of immunity. It does demonstrate that the vaccination procedure will not result in the development of a false positive reaction.

American Review of Tuberculosis, New York

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Culturing of Tubercle Bacilli from Human Spleen, Liver and Kidney—Woodruff and his co-workers took cultures of human necropsy material in order to determine the number of tubercle bacilli per gram of tissue in spleen, liver and kidney. In a large majority of the cases cultures of the spleen were found positive for tubercle bacilli. A smaller proportion of liver cultures and even fewer of the kidney cultures were positive. A rather close correlation was found to exist between positive culture and microscopically demonstrable tubercles in the same organ. A high bacterial count was associated with the type rather than the number of tubercles, the

highest counts being found in those organs which had caseous miliary tubercles. The number of tubercle bacilli found per gram of splenic tissue was nearly always greater than the number of bacilli in liver and kidney. The only exceptions were cases with extensive tuberculous enteritis or other abdominal tuberculosis. In these cases the liver contained more tubercle bacilli than the spleen.

Hemorrhage in Pulmonary Tuberculosis—Minor collected data for this study from the records of 1,000 sanatorium patients. He found that hemorrhages occurred in 243 per cent. The average size of hemorrhage was 5 ounces (150 cc). Forty per cent of hemorrhages eventually recurred. In 60 cases the first remarkable symptom was hemoptysis. Seventy per cent of cases with a history of hemorrhage before the diagnosis were properly diagnosed by the local physician when he was consulted. However, 13 per cent were misdiagnosed. Most tuberculous patients who have a hemorrhage have a cavitation visible on x-ray examination, 83.4 per cent of this series had a positive sputum. Trauma to the chest, strenuous exercise, mechanical disturbance of the lungs and, in females, the menstrual period are definite precipitating factors. Small hemorrhages often occur from early lesions at the height of the catarrhal and toxic symptoms, which probably signify softening. These are not usually serious and may in the long run be beneficial if they call attention to an undiagnosed tuberculosis. However, larger hemorrhages which occur in chronic ulcerative tuberculosis, while rarely immediately fatal, are accompanied by many unpleasant and dangerous possibilities. Of the twelve deaths which occurred in the Blue Ridge Sanatorium of Charlottesville, Va., after hemoptysis it was felt that five were directly or indirectly the result of the hemorrhage.

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- *Syndrome of Rupture of Aortic Aneurysm into Pulmonary Artery: Review of Literature with Report of 2 Cases R. E. Nicholson—p. 286
- Traumatic Heart Disease: Clinical Study of 250 Cases of Non-penetrating Chest Injuries and Their Relation to Cardiac Disability H. Arenberg—p. 326

Dupuytren's Contracture as Sequel to Coronary Artery Disease—Kehl reports 6 cases of Dupuytren's contracture as a sequel to coronary occlusion. The palmar changes in the cases presented by Kehl appear to be typical of Dupuytren's contracture in its various stages. Three cases progressed to the stage of contracture and in no case was regression noted. Pain, stiffness, swelling, livid discoloration, numbness, tingling and abnormal skin temperature of the hands may be associated with the palmar changes. The etiology and pathogenesis are not understood but irritation of the sympathetic ganglia may assume an important etiologic role.

Early Recognition of Cardiovascular Syphilis—Dressler and Silverman report studies in 1,270 cases of proved syphilis which were referred for cardiovascular checkup. There were 390 cases of cardiovascular syphilis, and 304 of these were diagnosed as uncomplicated syphilitic aortitis. The authors answer in the affirmative the question whether a clinical diagnosis of uncomplicated aortitis is impossible in the presence of a normal sized aorta. They establish the following criteria for clinical diagnosis in patients 40 years of age or younger: 1. The presence of a characteristic aortic second sound, which may be described as tambour drumlike, tympanitic or hollow and is usually heard over the second or third right sternal space and sometimes over the fourth space. 2. The presence of a

systolic murmur over the aortic area (second, third or fourth right sternal space, over the sternum, the third left sternal space or in more than one of these areas) A systolic murmur has been heard in many instances over the mitral area 3 The presence of suprasternal (episternal) pulsations This sign indicates elongation and dilatation of the aortic arch 4 The presence of increased retromanubrial dullness in the second intercostal space This sign is of value only when the aortitis is far advanced and there is a widening of the aorta 5 The presence of hypertension as a diagnostic aid Both systolic and diastolic pressures are elevated 6 Corroboration of the clinical findings by the use of fluoroscopy and roentgenography to demonstrate the presence or absence of a widened aorta All patients with cardiovascular syphilis should be started with a preparatory course of bismuth compounds and iodides before arsenical therapy is attempted This course should consist of at least ten to twelve intramuscular injections of bismuth subsalicylate in oil (0.1 to 0.2 Gm) at weekly intervals followed by a similar course of neoarsphenamine (0.1 Gm) or mapharsen (0.01 Gm) the dosage being gradually increased With the exception of cases of uncomplicated syphilitic aortitis, the dose should not exceed 0.3 Gm of neoarsphenamine or 0.03 Gm of mapharsen in any cardiac condition Arspenamine should never be used in the treatment of cardiovascular syphilis The treatment should be continuous for at least two years The serologic reaction should have no bearing on the length and type of treatment If sufficiently improved, the patient is given a rest period of six months and asked to return for a cardiovascular checkup If the patient has developed aortic insufficiency or aneurysm treatment must be more conservative The preliminary bismuth and iodide therapy is started, but the arsenicals must be used with caution and in many instances they should be avoided The life expectancy of patients with uncomplicated syphilitic aortitis who receive early and adequate treatment is a normal lifetime, whereas for patients who show complicated cardiovascular syphilis it ranges from about one to ten years

Rupture of Aortic Aneurysm into Pulmonary Artery

—Nicholson stresses that the rarity of rupture of an aortic aneurysm into the pulmonary artery is unusual in view of the close anatomic relationship between the two vessels and the great frequency of aneurysm of the thoracic aorta Only 81 instances have been mentioned in the literature This low incidence may be explained on the basis of pinpoint communications between the great vessels, oversight on the part of the pathologist and failure to appreciate the condition clinically Over a thirty year period only 2 instances were observed at the Charity Hospital of Louisiana in New Orleans One occurred in a 39 year old woman who survived five months after rupture, and the other in a 40 year old man whose duration of life following rupture was six days Both instances were diagnosed correctly prior to death The author reviews the incidence of clinical manifestations which might serve for recognition of the syndrome The history reveals a sudden onset with severe stabbing pain or a sense of oppression in the precordial area with or without radiation, usually following physical exertion and succeeded by pronounced and increasing dyspnea The subjective signs are definite and increasing shortness of breath, progressive swelling of the lower extremities and trunk, rasping cough with expectoration or hemoptysis and bluish discoloration of the face and extremities, pallor may be the alternative The objective signs are an intense thrill in the second to third left interspace occurring during systole or continuous throughout the cardiac cycle, humming "machine-like" murmur, heard best to the left of the sternum in the second or third interspaces, continuous throughout the systolic and diastolic phase and crescendo-decrescendo in character, being more intense during systole, evidence of aneurysm of the aorta, increasing dyspnea usually reaching the extent of orthopnea, cyanosis of the lips, face or extremities or distinct pallor of the same areas, edema of the lower extremities and trunk progressing to anasarca, the hemodynamic phenomena of aortic regurgitation (Corrigan's pulse, increased cardiac rate, capillary pulsation, Duroziez's sign), roentgenographic evidence of aneurysmal dilatation of the aorta, prominent and enlarged pulmonary conus and probable enlargement of the heart, electrocardiographic

indications of a nonspecific character but usually indicative of a sinus tachycardia, right axis deviation, and lowering, inversion or diphasicity of the T waves in the standard and precordial leads

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Prevention of Infection in Contaminated Accidental Wounds—Meleney summarizes records from 1,500 cases which include 682 wounds of the soft parts, 471 compound fractures and 347 burns Studies had been carried out by a number of different units to establish the effect of the sulfonamides on accidental wounds There was no evidence that either sulfanilamide or equal parts of sulfanilamide and sulfadiazine locally or sulfadiazine generally with or without the local use of drugs have cut down the incidence of local infection in wounds of the soft parts It is true, however, that the incidence of septicemia or of death is extremely low in this series and it may be stated that the spread of infection from the local site has been minimized The combined local and general or general use of sulfonamides alone has not lowered the incidence of local infection in compound fractures Although there were only 2 patients who died as a result of infection, and these yielded no positive blood cultures, a fair number of patients needed secondary surgical procedures because of wound infection The infection rate in burns is very disturbing, particularly in the deep second and third degree cases There is evidence that there may be greater or less absorption of the drugs from burned surfaces according to the vehicle in which the sulfonamide drugs are contained The ideal vehicle has not been found Many are being tried The local drug action may be inhibited while the general effect may be obtained from local applications There were only two burn deaths in which infection played an important part and these were so extensive that death might have occurred without infection In both, local and general sulfonamide treatment was administered The author concludes that the sulfonamides minimize the general spread of infections and cut down the incidence of septicemia and death There is no evidence that they lessen the incidence of local infection

Protein Nutrition in Burned Patients—Taylor and his associates studied the problem of protein metabolism in burned patients Hypoproteinemia occurred frequently in a series of 63 patients In some, hypoproteinemia was fugitive and was probably associated with early loss of plasma In others, it persisted but later responded to high protein diets of 3,000 calories which contained from 100 to 125 Gm of protein per day and were supplemented with 25 to 30 Gm of brewers' yeast and other vitamin supplements Other patients did not respond to such diets or could not ingest them This group was composed of the most severely burned and in them the hypoproteinemia became progressive and often reached the anasarca level A detailed study of nitrogen metabolism has been made on a patient with a burn of 55 per cent of his body surface

Similar studies have been made on 9 other patients. In severely burned patients there appears to be an excessive loss of nitrogen into the urine in addition to large losses of nitrogen by exudation from the burned surface and an increased nitrogen demand for the building of new tissue. Studies on the patient revealed that nitrogen balance determinations based on urine and stool analyses, together with known nitrogen intake, cannot reveal the considerable nitrogen loss from the burned surface and the demand for building new tissue. On a high protein diet alone this patient developed a protein deficit of 2000 Gm. The patient's edema increased and it was not until a total nitrogen retention estimated at over 6000 Gm of protein had been obtained that the edema was completely relieved and good nutrition obtained. At least 6000 Gm of protein was required over and above that indicated by balance studies. In some severely burned patients positive nitrogen balances will be found impossible to maintain from diets alone. In such an event forced alimentation by intubation or by the intravenous administration of amino acids should be attempted as soon as possible. Such protein deficits cannot be replaced by whole blood or plasma transfusions since it would be necessary to administer 120 liters of plasma to accomplish the equivalent of the supplementary alimentation given. At present the only satisfactory way is forced alimentation by intubation and amino acid administration by vein with proper precautions.

Amino Acids, Serums and Plasma in Replacement Therapy of Fatal Shock.—Elman and Lischer describe hemorrhage in which replacement of the lost blood by an amino acid mixture seemed to have a beneficial effect. The approach has been biochemical rather than physical or physiologic. This is emphasized because amino acid mixtures cannot be regarded as blood substitutes since they lack the colloidal properties of blood plasma. The value of such injections must depend on the ability of the body to use amino acids to synthesize plasma proteins rapidly or for nutritive or other metabolic purposes. It is theoretically possible for injected amino acids to be made into plasma proteins rapidly and thus act as an indirect substitute or supplement to plasma. The liver is the key organ in this process. Fatal surgical shock in unanesthetized dogs followed bleeding 10 cc per kilogram of body weight every hour, the mean survival time being 36 hours. There was a progressive fall in the blood pressure in the red cell volume and in plasma albumin and globulin in all experiments. If the blood removed each time was immediately replaced by the same volume of various solutions significant differences were observed as follows. The survival time was unchanged with dextrose in saline solution, was increased to 42 hours with pure amino acids, and was increased to 515 with hydrolyzed protein. With citrated plasma or serum, survival time was but 45 and 46 hours whereas with heparinized plasma it was 60 hours. The fall in blood pressure was greater with citrated plasma and serum than with heparinized plasma whereas hydrolyzed protein produced less hypotension than dextrose. Study of the changes in red cell volume and in plasma proteins gives some indication that the amino acids of hydrolyzed protein were converted into plasma albumin. Microscopic study of the liver suggests that protein is lost from the hepatic cytoplasm in hemorrhage and that injecting hydrolyzed protein replenishes this loss as compared with experiments in which dextrose was used. It may be inferred that in shock due to repeated hemorrhage a solution containing amino acids and peptides of hydrolyzed protein has a beneficial influence as compared with dextrose and that heparinized is far superior to citrated plasma.

Traumatic Shock.—Fine and his co-workers report a study on the capillary leakage hypothesis in shock utilizing radioactively tagged plasma proteins. By tagging the plasma protein molecule with a radioactive element and introducing such plasma protein into the blood stream a label is provided by which to identify the movement of plasma proteins. In order to obtain as physiologic a preparation as possible, radioactive cystine was synthesized from radioactive sulfur (eighty day half life) and was fed to plasma protein deficient dogs which incorporated the cystine into their own plasma proteins. Plasma protein removed from these dogs was then administered to normal dogs and to dogs shocked by hemorrhage and its rate

of escape from the circulation determined. Plasma proteins tagged with radioactive isotopes (S^{35} , Br^{82} , I^{131}) were used to study the capillary leakage hypothesis in hemorrhagic, tourniquet and burn shock. No evidence of leakage due to a change in the permeability of the general capillary bed was found. Tagged plasma proteins escaped into areas of injury in considerable amounts but not into untraumatized areas. There is no evidence to show that the general capillary bed becomes more permeable to plasma proteins or plasma in the late or irreversible phase of shock. Data obtained by the use of radioactively tagged red cells injected intravenously combined with tissue analyses for hemoglobin and tagged red cell content indicate that about one fifth of the capillary blood becomes stagnant or trapped out of active circulation as the shock phase deepens. The progressive decline in shock is not due to a fall in plasma volume but to a fall in the volume of actively circulating plasma. The blood content per gram of tissue is not more and is generally the same, or less in shock than it is in normal dogs. The therapeutic problem in shock, after adequate replacement of lost blood or plasma has failed is one of restoring volume and velocity flow through capillaries before the integrity of vital tissue processes is lost.

Archives of Neurology and Psychiatry, Chicago

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Electrical Excitation of Cerebral Cortex. Description of New Stimulator. W. E. Rahm, Jr. and J. E. Scarff—p. 183
Special Hospital in Time of War. W. Penfield and W. V. Cone—p. 193

Azosulfamide and Phenobarbital in Epilepsy.—According to Cohen and his associates azosulfamide has been demonstrated to exhibit anticonvulsant action in patients with epilepsy. Associated with the anticonvulsant effect alterations in the concentration of chemical constituents of the serum were described. These included a decrease in the carbon dioxide content of the serum, a decrease in the carbon dioxide combining power of the serum and an elevation in serum chlorides. The authors investigated the nature of the metabolic changes associated with ingestion of azosulfamide and with phenobarbital, a drug with anticonvulsant properties. Administration of azosulfamide is accompanied by a decrease in the carbon dioxide content and the carbon dioxide tension of the serum. The decreased carbon dioxide content and the lowered carbon dioxide tension of serum accompany the anticonvulsant effect. The anticonvulsant effect of both azosulfamide and phenobarbital coincides with a positive potassium balance. Ammonium chloride produces the same degree of "acidosis" as does azosulfamide, without alteration of potassium exchange and does not have an anticonvulsant effect. Phenobarbital produces no "acidosis" but a positive potassium balance and has an anticonvulsant effect. This suggests that "acidosis" is not necessarily the crucial factor in anticonvulsant action.

Archives of Physical Therapy, Chicago

24 449-512 (Aug.) 1943

- Influence of Kenny Concept of Acute Poliomyelitis on Physical Treatment Throughout All Stages of Disease. R. L. Bennett—p. 453
Analysis of Treatment of Infantile Paralysis. With Comments on Kenny System. A. M. Rechtman—p. 461
Future of Rehabilitation. T. C. Foster—p. 472
Effect of Therapeutically Administered Carbon Dioxide Inhalation on Respiration in Pulmonary Tuberculosis. A. L. Banyai and G. H. Jurgens—p. 475
Control of Peripheral Circulation. Review of Physiologic Literature. K. Harpuder—p. 481
Physical Therapy of Peripheral Vascular Disease. H. Warshawsky and Mary W. Dempsey—p. 487

California and Western Medicine, San Francisco**59 105-154 (Aug) 1943**

- Rheumatic Fever Its Incidence in Southwestern States S J McClendon—p 114
Disposition of Substandard Military Personnel W P Corr—p 116
Women in Industry Study of 135 Women Working as Riveters in Aircraft Industries W C Bradbury and C B S Evans—p 119
*Cancer of Uterus Vaginal Smear in Its Diagnosis H F Traut and G N Papanicolaou—p 121
Malignant Tumor of Breast E G Motley and D A Harwood—p 123

Vaginal Smear in Diagnosis of Uterine Cancer—Papanicolaou discovered in the course of routine studies of human vaginal smears not only that the normal cells were shed but that many pathologic cells could be found, among them those of cancer. Papanicolaou and Traut studied thousands of vaginal smears in an attempt to determine the incidence of cancer cells in the vaginal smear as related to the incidence of malignant disease in the uterus, as demonstrable by clinical methods and biopsy technique. The malignant epithelial cells exfoliate from the surface of neoplastic growths much as do normal cells. They float downward into the vaginal fornix, where they accumulate and become mixed with normal cells of epithelial and blood origin, as well as with mucus, bacteria, parasites and cellular debris. The rate of exfoliation of malignant cells seems to be dependent on the rate of growth of the neoplasm and its size. Meticulous scrutiny of the stained smear preparations is an important essential. The vaginal smear presumptive diagnosis should be substantiated by biopsy. The value of the vaginal smear in the diagnosis of cancer of the uterus is that it can be applied to larger numbers of women because of its simplicity and ease of application. The vaginal smear may be made without trauma and thus the danger of dissemination by way of open lymphatics is avoided. The authors found in the course of several thousand examinations 193 instances of carcinoma of the uterus—about 126 lesions involving the cervix and of both the squamous and the adenocarcinomatous types, the remaining 67 were carcinomas of the fundus. The smear showed the presence of cancer of the cervix in all but 13 per cent of instances when it was demonstrable by biopsy. Thirteen instances of adenocarcinoma were revealed for the first time by the vaginal smear when no other clinical procedure had sufficed to make the diagnosis. Some of these were early lesions.

Canadian Journal of Public Health, Toronto**34 347-392 (Aug) 1943**

- The Blind in Canada F S Burke—p 347
*Immunization Against Influenza A R Hare J Morgan Jocelyn Jackson and Dorothy M Stamatis—p 353
Canada and Tropical Disease J L Little—p 360
Family Roster Service in Lamont Health District H Siemens—p 364
Errors in Calculation of Nutritive Value of Food Intake III Comparison of Calculated and Determined Amounts of Iron Constance M Young and E W McHenry—p 367

Immunization Against Influenza A—Hare and his associates state that a vaccine made by concentrating the virus in allantoic fluid according to the method of Hare, McClelland and Morgan is strongly antigenic and that the serum taken after immunization has a high titer as measured by the agglutinin inhibition test. The levels reached are as high as those reached by patients convalescing from the disease. But whether the immunization had conferred actual immunity cannot be answered until an immunized population is subjected to an epidemic. A higher antibody level is obtained with a concentrated vaccine than with allantoic fluid which has been untreated. There was a possibility that a soluble antigen which may have been present in allantoic fluid but is removed when the vaccine is made might have been of importance. Whether one or two doses of vaccine should be given is a moot point, because the increase in antibody level was in general lower when two doses were given than with only one. The reasons for this are not apparent other than the possibility that there may have been a negative phase in Wright's sense of the term. The use of the concentrated vaccine is not as yet practicable when large numbers are to be immunized. The actual process of concentration is not difficult, but the yield is small. Little more than 7 or 8 cc of fluid can be collected from each egg, and if this is concentrated ten times it follows that less than 1 cc of

completed vaccine can be obtained from each egg. Unconcentrated vaccine was definitely a less powerful antigenic stimulus than the concentrated, some subjects having scarcely any rise in titer. Should the vaccine doses confer immunity, the problem would be one of production.

Cancer Research, Baltimore**3 569-648 (Sept) 1943**

- Infection of Turkeys and Guinea Fowls by Rous Sarcoma Virus and Accompanying Variations of Virus F Duran Reynals—p 569
Growth of Chicken Sarcoma Virus in Chick Embryo in Absence of Neoplasia J J Milford and F Duran Reynals—p 578
Studies on Rous Sarcoma Cells Cultivated in Vitro II Morphologic Properties of Rous Sarcoma Cells E Tenenbaum and L Doljanski—p 585
Further Observations on Skin Carcinogenesis by Single Application of 20 Methylcholanthrene W L Simpson and W Cramer—p 604
Carcinogenic Activity of Some New Derivatives of Aromatic Hydrocarbons I Compounds Related to Chrysene C E Dunlap and S Warren—p 606
Reported Production of Tumors by Normal Liver Cells of Mice Bearing Tumors Produced by Methylcholanthrene L Dmochowski—p 608
Effect of Temperature on Ultraviolet Carcinogenesis with Wavelengths 2,800 3,400 Å J A Bain H P Rusch and B E Kline—p 610
Growth and Regression of Frog Kidney Carcinoma Transplanted into Tails of Permanent and Normal Tadpoles R Briggs and R Grant—p 613
Tissue Metabolism Studies on Bone Marrow Consideration in Relation to Tumor Metabolism C O Warren—p 621

Experimental Medicine and Surgery, Brooklyn**1 229-308 (Aug) 1943**

- Croton Oil Shock B Kisch and H Koster—p 229
Hematocrit Readings of Normal Dogs B Kisch and E Strauss—p 250
Action of Sodium Thiosulfate on Blood J Litwinski L J Boyd and L Greenwald—p 252
Effect of Sulfonamides on Cerebral and Neuromuscular Actions D I Macht—p 260
Acetylcholine and Mechanism of Nerve Activity D Nachmansohn—p 273
On Specificity of Procaine Esterase B Kisch—p 278
Experimental Studies on Functional Murmurs and Extra Sounds of Heart A A Luisada and H Mautner—p 282
Gelatin Infusion in Hemorrhagic Shock Martha Janoff, H Necheles, R E Weston, V Weissman and S O Levinson—p 298

Journal of Nutrition, Philadelphia**26 105-218 (Aug) 1943**

- Effect of Severe Calcium Deficiency on Pregnancy and Lactation in Rat Muriel D D Boelter and D M Greenberg—p 105
*Digestion of Whole Wheat and White Breads in Human Stomach H H Rostorfer, C D Kochakian and I R Murlin—p 121
Effect of Sodium Chloride on Disposition of Injected Glucose in Strain of Rats G Sayers M Sayers and J M Orten—p 139
Effect of Vitamin D on Calcium Retentions Hughina McKay, Mary B Patton Martha S Pittman Genevieve Stearns and N Edelblute—p 153
Effects of Pantothenic Acid and Inositol Added to Whole Wheat Bread on Evacuation Time Digestion and Absorption in Upper Gastrointestinal Tract of Dogs C G Bly F W Heggeness and E S Nasset—p 161
Further Consideration of Effect of Altitude on Basal Metabolism Study on Young Women Residents of Denver R C Lewis Alberta Iliff and Anna Marie Duval—p 175
Study of Availability of Iron in Enriched Bread H R Street—p 187
Prevention of Perosis and Dermatitis in Turkey Poults H Patrick, R V Boucher, R A Dutcher and H C Knudsen—p 197
Studies on Nutritional Requirements of Rhesus Monkey H A Waisman, A F Rasmussen Jr C A Elvehjem and P F Clark—p 205

Digestion of Bread in Human Stomach—Peeled wheat bread made from flour containing all of the wheat kernel except the outer epidermis weighing less than 2 per cent was studied by Rostorfer and his collaborators in comparison with several other breads in experiments on gastric digestion in 6 human subjects. Samples drawn from the stomach by the Rehfuess tube one hour after eating were analyzed for total and free acidity, total solids, pepsin, total and free reducing substance and total and soluble nitrogen. Corrections for time lost in sampling and for free reducing substance and soluble nitrogen in the breads made possible the calculation of rates of carbohydrate and protein gastric digestion. It was found that a small extra amount of pantothenic acid (possibly aided by some other B factor) contained in high vitamin yeast has a favorable effect on digestion at least as great as much larger amount of the synthetic calcium salt of this acid taken in at least two

does, one an hour before the test meal and the other eight to ten hours before. Another important observation was with respect to the digestion of starch in breads. The use of high vitamin yeast seems to bring the digestibility of whole wheat bread up to that of white bread. This appears to offer a clue to the preparation of a "successful" whole wheat bread, but the improvement as yet applies only to digestion of "hydrolyzable carbohydrate." Possibly the addition of nonfat milk solids would increase protein digestion (in the stomach) also to the level of that of ordinary white bread. Further experiments are necessary to clarify questions involved in the production of a wholly acceptable whole (98 per cent) wheat bread. In the gastric digests of the whole wheat bread the average pepsin content was approximately 40 per cent greater (Mett tube measurement) than in those of the two white breads. The peptogenic value of whole wheat bread, therefore, is not to blame for lower rates of protein digestion, and such error as results from the small amount of (soluble) nitrogen in the pepsin does not invalidate but rather gives emphasis to the slower rate of gastric digestion of the whole wheat product. The vital economic value of whole wheat as food for man is not touched by these facts, for the over all digestion is sufficiently high to produce a large net saving not only of protein but also of calories from the wheat for human consumption. It appears plausible that the slower rate of digestion of whole wheat in the human stomach as compared with white bread is responsible at least in part for the relative unacceptability of the former by the general public.

Journal of Pediatrics, St Louis

23 131-250 (Aug) 1943

- Determination of Bone Age in Children. Method Based on Study of 1129 White Children. L. A. Lurie, S. Levy and M. L. Lurie—p. 131
- Feet of Normal Children. Study of Lateral X-Ray of Weight Bearing Foot. M. Robinow, Margaret Johnston and Margaret Anderson—p. 141
- Significance of Widal Reaction in Enteric Diseases of Children. M. Greenberg—p. 150
- Meningococcemia. N. Silverthorne—p. 155
- Postrubella Encephalomyelitis. Report of Cases in Detroit and Review of Literature. F. J. Margolis, J. L. Wilson and F. H. Top—p. 158
- Effects of Poliomyelitis Virus on Urinary Bladder of Rabbits. J. A. Toomey, J. D. Pilcher and P. T. Rossman—p. 166
- *Attempts to Recover Poliomyelitis Virus from Fruit Well Water. Chicken Cords and Dog Stools. J. A. Toomey, W. S. Takacs and Linda A. Tischer—p. 168
- Attempts to Isolate Poliomyelitis Virus from Urine. J. A. Toomey, Linda A. Tischer and W. S. Takacs—p. 172
- Mediastinal Emphysema and Pneumothorax Following Tracheotomy. Report of 4 Cases. G. B. Forbes and G. W. Salmon—p. 175
- Hemophilus Influenzae Type B Laryngitis with Bacteremia. Report of 4 Cases. P. G. Du Bois and C. A. Aldrich—p. 184
- Sudden Death in Infants Due to Pneumonia. J. M. Adams—p. 189
- Wheat Germ Oil (Vitamin E) in Treatment of Congenital Nonobstructive Hydrocephalus. S. Stone—p. 194
- Chemical and Enzyme Studies of Duodenal Contents of Infants. L. Kajdi and W. C. Davison—p. 204
- Idiosyncrasy to Metallic Mercury with Special Reference to Amalgam Fillings in Teeth. M. H. Bass—p. 215
- Congenital Pulmonary Cysts. Report of Infant Treated by Lobectomy with Recovery. C. C. Fischer, F. Tropea Jr and C. P. Bailey—p. 219
- Streamlined Infant Feeding. Feeding Routine Utilizing Earlier Addition of Solid Foods and Fewer Feedings. N. W. Clein—p. 224

Attempts to Recover Poliomyelitis Virus—Toomey and his associates attempted to recover poliomyelitis virus from fruit (washings), well water, stools from sick dogs and cords from paralyzed chickens found in vicinities where human poliomyelitis had occurred. Although the virus may have been present in the specimens tested, its existence could not be demonstrated when either the eastern cotton rat or the Macaca mulatta monkey was used as the test animal.

Attempts to Isolate Poliomyelitis Virus from Urine—Toomey and his collaborators tried to demonstrate the virus of poliomyelitis in the urine of patients with bladder paralysis. Their attempt was a failure when the monkey was used as the test animal, even though such specimens were obtained at an optimal time, that is, coincident with the onset of the paralysis. Urine obtained post mortem from the bladders of poliomyelitis patients was tested for the presence of the virus on eastern cotton rats. These tests also gave negative results.

Journal of Thoracic Surgery, St Louis

12 503 606 (Aug) 1943

- Bronchogenic Cysts of Mediastinum with Report of 3 Cases. W. F. Adams and T. F. Thornton—p. 503
- Decompression of Heart in Severe Scoliosis. Report of Case. C. R. Lam and R. D. McClure—p. 517
- Surgical Anatomy of Bronchi and Vessels. L. Miskall and C. M. Cornell—p. 526
- Preliminary Phrenic Vagus Inhibition in Thoracic Surgery. J. Arce and M. M. Brea—p. 544
- Accessory Pulmonary Artery Probably Arising from Abdominal Aorta. J. Arce—p. 548
- Operation Performed in One Stage with Inhalation Anesthesia for Hydatid Cysts of Lung, Free of Adhesions. A. Ceballos—p. 553
- Experiments in Intracardiac Surgery. II. Intracardiac Visualization. D. E. Harken and Evelyn M. Chidden—p. 566
- Postoperative Disturbances of Respiratory Mobility. L. Hofbauer—p. 573
- Artificial Pneumothorax. Nonstatistical Analysis of Major Factors Involved in Its Proper Management. T. N. Rafferty—p. 578
- Major Surgery in Amyloidosis. J. M. Beardsley—p. 590
- Putrid Empyema. I. Kross—p. 601

Journal of Urology, Baltimore

50 1-122 (July) 1943

- Management of Hydronephrosis Due to Ureteropelvic Obstruction. Preliminary Report. R. B. Henline and J. H. Menning—p. 1
- Renal Ectopia. Report of 2 Cases with New Method of X-Raying Pelvic Ectopia. N. S. Scarcello—p. 25
- Primary Actinomycosis of Kidney. Case Report. D. L. Cohen—p. 29
- Results of Surgical Treatment of Diffuse Glomerular Nephritis. C. L. Onell and I. Diaz Muñoz—p. 34
- Transvesical (Suprapubic) Closure of Vesicovaginal Fistula. W. Valmé—p. 40
- Review of Primary Carcinoma of Ureter. Presenting 2 Cases. W. W. Scott—p. 45
- Synthetic Hydrocarbon for Relief of Ureteral Spasm. H. G. Lund and F. G. Zingal—p. 65
- Report of Case of Bilharziasis. J. C. Burt, C. M. Lane and J. L. Hamilton—p. 68
- *Absorption of Protein from Urinary Bladder. L. H. Baretz, M. Harten and M. Walzer—p. 71
- Clinical Study of Obscure Bladder Disease Using Frei Tests. V. F. Marshall and Ellora Eadicott—p. 76
- *Postmortem Findings in Carcinoma of Prostate Following Castration and Diethylstilbestrol Therapy. Case Report with Autopsy and Postmortem Tissue Acid Phosphatase Studies. G. G. Gilbert and G. Margolis—p. 82
- Paravesical Appendicular Abscess with Report of an Unusual Case of an Old Appendical Abscess with Symptoms of Prostatism. J. A. Lazarus—p. 95
- Further Modification of Foley and Alcock Foley Retention and Hemostatic Catheters. M. Wolf—p. 100
- Mixed Leiomyoma and Lymphangioma of Epididymis. S. Malisoff and M. Helpern—p. 104
- Formation of Urinary Calculi. H. K. Lassen—p. 110
- Simple Aid for Testicular Biopsy. N. C. Schlossmann—p. 121

Absorption of Protein from Urinary Bladder—Baretz and his associates state that various dyes, anesthetics, drugs, urea and urinary constituents are absorbed from the urinary bladder of man, dog, cat, guinea pig and rabbit. In the present study a direct immunologic technic has been used to study the absorption of protein from the urinary bladder. Specific excitation of a passively sensitized cutaneous site was induced by oral administration of the related antigen. Studies with this method revealed that the absorption of unaltered protein occurred with physiologic regularity following oral, intraduodenal and rectal administrations of the protein and on introduction of the protein into the cervix and vagina. Experiments are described which demonstrate that absorption of traces of unaltered protein from the urinary bladder does occur. The choice of cottonseed as the antigen to be studied was determined by the availability of a serum which was particularly suitable for this purpose. This sensitizing serum was obtained from a patient with a high degree of cutaneous sensitivity to cottonseed. The uniformly positive results obtained with this simple immunologic technic in monkeys and in man clearly establish the fact that detectable traces of protein are absorbed from the urinary bladder. This organ must therefore be considered as a possible site of absorption of allergenic substances introduced into the bladder for therapeutic or diagnostic purposes. Such traces of absorbed protein are more than sufficient to produce severe reactions in individuals who are sensitive to the allergen employed. In contrast to previously reported technics which depended on chemical tests and on delayed immunologic responses to the introduced protein, the technic herein described permits almost immediate detection of the entrance of the protein into the circulation.

Postmortem Findings in Carcinoma of Prostate—Gilbert and Margolis report a case of carcinoma of the prostate treated by transurethral resection, castration and diethylstilbestrol. This case is quite similar to the reported cases of delayed failure following castration for prostatic carcinoma. There was a temporary phase of improvement during which there was relief from pain, a decrease in the size and degree of induration of the prostate, and regression of lung metastases. This was followed by a period in which the tumor was refractive to diethylstilbestrol therapy, progressed rapidly and yet remained clinically quiescent in the prostate and in the lungs. The serum acid and alkaline phosphatase values in this case roughly paralleled the course of the disease.

New York State Journal of Medicine, New York

43 1375-1470 (Aug 1) 1943

- Physical Therapy in Peripheral Nerve Injuries R Kovács—p 1403
Sulfonamide Therapy of Ocular Infections P Thygeson and W Stone Jr—p 1409
Problem of Self Esteem in Psychotherapy L R Wolberg—p 1415
Psychiatry in General Hospital C P Oberndorf—p 1420
Treatment of Angina Pectoris by Testosterone Propionate—L H Sigler and J Tulgan—p 1424
Intracranial Arteriography with Rapidly Excreted Iodine Compound (Diodrast) J L Pool and S Alexander—p 1429

43 1471-1566 (Aug 15) 1943

- Danger of Cutaneous Reactions to Sulfonamides Report of 2 Cases of Bullous Eruption Following Use of Sulfanilamide, One of Which Resembled Pemphigus Vulgaris D Bloom—p 1499
Tropical Diseases—Postwar Health Problem T T Mackie—p 1509
New Developments in Infantile Paralysis D W Gudakunst—p 1514
Vaginal Antisepsis During Labor H W Mayes—p 1518
Care of Soft Tissue Injuries F Young—p 1521
Birth of Medical Education in Upstate New York T W Clarke—p 1527
Unusual Case of Undulant Fever with Postoperative Pyrexia M H Morris—p 1538

Surgery, St Louis

14 157-320 (Aug) 1943

- Nonoperative Treatment of Cardiac Tamponade Resulting from Wounds of Heart A Blalock and M M Ravitch—p 157
Nonpenetrating Abdominal Trauma E C Kelly—p 163
Therapy of Shock in Experimental Animals with Serum Protein Solutions E E Muirhead, C T Ashworth, L A Kregel and J M. Hill—p 171
*Clinical Experience with Thrombin as a Hemostatic Agent R T Tidrick, W H Seegers and E D Warner—p 191
Metabolic Studies in Patients with Cancer of Gastrointestinal Tract P E Rekers, G T Pack and C P Rhoads—p 197
*Unilateral Decapsulation of Kidney for Transfusion Oliguria. S C Flo and H W Cummings—p 216
Urinary Retention Following Combined Abdominoperineal Resection F A Celler and P F Eastman—p 223
Tissue Reactions to Medicaments Used in Local Treatment of Burns M E Maun, R C Schneider, M A Pilling and J W Hirshfeld—p 229
Relationship of Acute Anemia to Wound Healing Experimental Study E L Besser and J L Ehrenhaft—p 239
Malignant Neoplasms of Spleen Review of Literature and Report of Case of Primary Lymphosarcoma (Reticulum Cell Type) P F Hausmann and F W Gaarde—p 246
Curare in Treatment of Tetanus Case Report S C Cullen and C S Quinn—p 256
Curare for Improvement of Abdominal Muscle Relaxation During Inhalation Anesthesia Report on 131 Cases S C Cullen—p 261
Preliminary Observations Concerning Paravertebral Injection of Sympathetic System in Hypertension H G Schwartz and T Findley—p 267
Traumatic Rupture of Duodenum With Case Report J Sarnoff and B H Oremland—p 272
Traumatic Chylothorax Case Treated with Intravenous Chyle E Schnug and J Ransohoff—p 278
*Carcinoma of Parathyroid Gland K A Meyer and A B Ragins—p 282
Arteriovenous Fistula of Common Femoral Vessels with Extreme Dilatation of External Iliac Vein Report of Case J R. Watson and R B Miller—p 296
Leg Ulcers as Complication of Caisson Disease S T Glasser—p 302
New Simple and Rapid Method for Hernial Sac Ligation R Lich Jr and R B Samson—p 306

Thrombin as Hemostatic Agent—Tidrick and his co-workers present a summary of clinical results obtained with the preparation "thrombin topical." Each vial contains approximately 10,000 units (the thrombin unit is defined as the amount required to clot 1 cc. of standard fibrinogen solution in fifteen seconds). Thrombin has been employed in over 225 cases in the University Hospitals of Iowa City. The largest group consisted of 102 cases in which thrombin was used to control

operative bleeding from donor skin graft sites. In 27 cases thrombin has been employed in the control of operative bleeding from cancellous or cortical bone. Thrombin was used also during cholecystectomy, in the Ramstedt pyloroplasty procedure, to control oozing from mastectomy skin flaps, following biopsy or traumatic wounds in cases of blood dyscrasia, in delayed postoperative bleeding, and in miscellaneous cases of soft tissue bleeding. The use of sulfonamide drugs in the wound is not a contraindication to the simultaneous use of thrombin, nor do the drugs interfere with the hemostatic action of the thrombin preparation. Thrombin provides a useful adjunct to surgical technique. Oozing of blood from capillaries and small venules can be checked promptly whenever the bleeding surfaces are accessible. Even in the case of small arteries application of thrombin is often effective, particularly if digital pressure can be applied to the bleeding points momentarily in order to permit the clot to become firmly anchored in the tissue. There has been no evidence that the thrombin produced local irritation or that patients for whom the preparation was used repeatedly became hypersensitive to it. None of the patients showed evidence of untoward effects from absorption of the thrombin or from local thrombosis of vessels.

Unilateral Decapsulation of Kidney for Transfusion Oliguria—Flo and Cummings report a case of post-transfusion reaction which was apparently cured by unilateral decapsulation of a kidney. Since the condition was becoming progressively worse and spontaneous recovery was despaired of, they felt that a unilateral decapsulation would do less harm than a bilateral one. If a unilateral decapsulation will break the vicious chain of events, this is the procedure of choice, especially in view of the damage to the kidney such an operation must entail.

Carcinoma of Parathyroid Gland—Meyer and Ragins present a detailed account of a case of carcinoma of the thyroid gland with postmortem observations. There was only a temporary improvement in the objective and subjective symptoms following extirpation of the tumor mass some twenty-six months before death. Eight months after the operation the subjective symptoms reappeared, and a year later the fibrocystic changes of the bone became progressively worse, despite x-ray irradiation to tumor mass and bone. This was followed by a number of pathologic fractures. Six weeks before death the serum phosphorus rose to 10 mg, indicating renal decompensation. The postmortem examination revealed a recurrent carcinoma of the parathyroid gland with metastasis to the peritracheal, subclavicular and perijugular lymph nodes, the lungs and the right kidney, generalized osteitis, fibrosis cystica of the bones, bilateral nephrolithiasis, bilateral chronic ascending pyelonephritis, left pyonephrosis with atrophy of the renal cortex and nephrocalcinosis.

Virginia Medical Monthly, Richmond

70 433-484 (Sept) 1943

- Infants of Diabetic Mothers Priscilla White—p 436
Pregnancy and Diabetes W R Jordan—p 441
Treatment of Ureteral Calculi A I Dodson and H C Lee—p 444
Problem of the Civilian Maladjusted D C Wilson—p 449
Treatment of Eclampsia with Veratrum Viride J M Whitfield—p 452
*Hookworm Disease T R Littlejohn—p 455
Hepatic Function in Acute Cholangitis Case Report N Bloom—p 457

Hookworm Disease—Littlejohn shows that some cases of hookworm disease are mistaken for other disorders such as peptic ulcer or appendicitis, and unjustifiable operations are performed. He reviews a number of case histories in which hookworm would probably not have been discovered had it not been for making simple routine laboratory examination. He stresses that all patients with chronic pain in the upper abdomen, especially with an increase of the eosinophil count, should be examined for hookworm ova. The thymol treatment is the least toxic and the most effective.

West Virginia Medical Journal, Charleston

39 265-296 (Aug) 1943

- Epidemic Keratoconjunctivitis F V Gammage—p 265
Diagnosis and Treatment of Nasal Sinus Diseases in Relation to Eye H M Goodyear—p 270
Penicillin and Other Mold Derivatives G A Bergy—p 272
Abdominal Pregnancy Report of Case A P Hudgins—p 277

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian J Exper Biol and M Science, Adelaide

21 55 132 (June) 1943

- Changes in Influenza Virus Associated with Adaptation to Passage in Chick Embryos. F M Burnet and Diana R Bull—p 55
Titration of Antibody Against Influenza Viruses by Allantoic Inoculation of Developing Chick Embryo. I M Burnet and W I B Beveridge—p 71
Studies on Clostridium Oedematis Group. I H and O Antigenic Analysis. A W Turner and Catharine E Eales—p 79
Studies in Physiology of Host-Parasite Relations. 4. Some Effects of Tomato Spotted Wilt on Growth. B J Grievie—p 89
Hemagglutination by Viruses. Range of Susceptible Cells with Special Reference to Agglutination by Vaccinia Virus. Ellen Clark and F P O Nagler—p 103
Incubation Period of Eggs of Halotendipes Destructor Tucker (Acarina) at Different Temperatures. J Davidson and D C Swan—p 107
Germinating Seeds as Source of Vitamin C in Human Nutrition. I Ascorbic and Dehydroascorbic Acid Contents of Several Varieties of Seeds Germinating Under Standard Conditions for Varying Periods of Time. J W H Lugg and R A Weller—p 111
Nervous Distemper in Dogs. Pathologic and Experimental Study with Some Reference to Demyelinating Diseases in General. F W Hurst, Barbara Tennent Cooke and P Melvin—p 115
Antibacterial Substances Produced by Molds. 3. Detection and Estimation of Antibacterial Activity in Vitro. Nancy Atkinson—p 127

British Journal of Experimental Pathology, London

24 81-132 (June) 1943

- Protective Properties of Alpha Antitoxin and Theta Antihaemolysin Occurring in Clostridium Welchii Type A Antiserum. D G Evans—p 81
Examination of Relationship Between Bacteriostatic Activity and Normal Reduction Potentials of Substituted Quinones. J E Page and F A Robinson—p 89
Fixation of Foreign Material in Inflamed Tissue with Especial Reference to Action of Clostridium Welchii Toxin and Antitoxin. A A Miles and E M Miles—p 95
Helvolic Acid, an Antibiotic Produced by Aspergillus Fumigatus. Mut Helvola Ynill, E Chan, H W Florey, M A Jennings and T I Williams—p 108
Note on Crystallography of Helvolic Acid and Methyl Ester of Helvolic Acid. D M Crowfoot and B W Low—p 120
*Serologic Specificity of Autoantibody in Atypical Pneumonia. J C Turner and E B Jackson—p 121
Some Investigations on Nature of Resistance of Inbred Line of Fowls to Development of Rous No. 1 Sarcoma. J G Carr—p 127

Serologic Specificity of Autoantibody in Atypical Pneumonia.—The existence of a relationship between atypical pneumonia and the cold agglutinins was pointed out by Turner in an earlier report. More recently a comprehensive investigation of the behavior of the cold agglutinins in a variety of infectious diseases revealed the aspect which seemed to be the key to its clinical and immunologic significance. This was the demonstration that the titer of cold agglutinins for the human erythrocyte rises in atypical pneumonia during the second week after the onset of respiratory symptoms in the fashion of specific immune antibodies. Abnormal amounts of cold agglutinin developed in more than 90 per cent of a group of cases of atypical pneumonia seen in the British Isles during the winter of 1942-1943. Thus, even though the infectious agent in this disease remains unknown except in the negative sense that it is probably not bacterial, a simple serologic principle for the delineation and classification of a current type of respiratory disease has been laid down. The authors examined the cold agglutinin of atypical pneumonia for serologic specificity by the methods of selective absorption and titration of activity on the erythrocytes of several species. It was found that the agglutinin has the properties of autoantibody and reacts equally with cells representing all four major human blood groups. When isolated by absorption the autoagglutinin exhibits a limited action on the erythrocytes of lower animals, having appreciable effect on rabbit cells only. It is suggested that this specificity may be explained by the existence of a heterogenic antigen shared by man and rabbit.

Glasgow Medical Journal

22 1 32 (July) 1943

- Cenosis of Human Voice. J Donald—p 1
Knee Injuries in the Army. J C Alexander—p 12
Primary Thrombosis of Axillary Vein. Report of 3 Cases. A. Lyall—p 16

Guy's Hospital Reports, London

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- Observations on Anatomy of Bronchial Tree with Special Reference to Surgery of Lung Abscess. R C Brock—p 111
Bronchial Embolism and Posture in Relation to Lung Abscess. R C Brock, F Hodgkiss and H O Jones—p 131
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- Shock Producing Factor(s) from Striated Muscle. I. Isolation and Biologic Properties. H N Green—p 147
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Dogs as Source of Leptospirosis Infection in Man. A D Gardner—p 157
Sudden Senescence. R Greene and A S Paterson—p 158
Purpura of Skin. Review of 500 Cases. E Davis—p 160
*Emergency Treatment of Smashed In Face. Value of Tracheotomy and Laryngotomy. D H Patey and E W Riches—p 161

Emergency Treatment of Smashed In Face.—According to Patey and Riches the smashed in face resulting from a severe blunt external force is emerging as a clinical entity. With the motor car and airplane as common agents in its production it is essentially an injury of modern civilization. The duties of the emergency surgeon in these cases are to deal with hemorrhage and gross soft tissue and bony damage, to inspect the eyes and, if necessary, to secure the cooperation of the ophthalmic surgeon, to be on the lookout for any suggestion of cerebrospinal rhinorrhea and to administer prophylactic sulfonamides. Anesthesia of the patient with smashed in face presents difficulties. Inhalation anesthesia through a facial mask is difficult not only because of the facial injuries but because of the blood which is constantly running into the pharynx and leading to coughing and partial obstruction. If the patient is anesthetized past the stage of the cough reflex, he tends to aspirate the blood into his lungs and may drown in his own blood. In this event the patient can be saved from death by asphyxia only by a rapid tracheotomy. Intravenous anesthesia might be thought to solve the difficulties, but asphyxial symptoms have been known to develop so quickly after intravenous injection that the patient's life was saved only by a rapid plunge laryngotomy. The author suggests that the initial emergency treatment of the severe types of smashed in face should be tracheotomy or laryngotomy under local anesthesia. Once an opening into the air passages has been made, the anesthetic problem becomes easy, the danger of death from asphyxia is averted and the reduction in cyanosis from the establishment of a free airway may by itself result in cessation of much of the hemorrhage.

South African Medical Journal, Cape Town

17 167-182 (June 12) 1943

- South African Native Health and Medical Service. H S Gear—p 167
*Outbreaks of Dysentery at Military Hospital in South Africa. M H Finlayson—p 173
Improved Technique for Vi Agglutination. A Pijper, Clarice G Crocker and Janet Todd—p 175
Case of Dysgerminoma of Ovary. J Black and O S Heyns—p 177
Epidemiologic Observations on Outbreak of Tick Relapsing Fever in Northern Transvaal. D Ordman—p 180

Dysentery in South Africa.—Finlayson reports that shortly after the opening of a military hospital cases of "gastroenteritis" were observed among the patients and staff. There were two clinical types—the one type in which the patient passed from three to twenty liquid stools in twenty-four hours and after about twenty-four to forty-eight hours appeared to recover completely, the second type, in which the attack was usually ushered in by violent vomiting and frequent loose stools, persisting for seven or eight days. The latter type did not occur among bed patients but was noted among the staff and convalescent patients who were not confined to the hospital premises. The microscopic appearance of the stools made possible a diagnosis of bacillary dysentery long before the causative organisms were isolated. The stool examinations were

carried out by the methods described by Finlayson in 1941. It was observed that although *Bacterium sonnei* was isolated from outbreaks of dysentery occurring among the staff and from sporadic cases occurring among convalescent patients who were allowed leave from the hospital, this organism was not once isolated among patients confined to bed. In all bed patients who acquired a dysenteric infection at the hospital the organism isolated was identified as of the *Bacterium flexneri* group. The results of examinations of various foodstuffs were all negative. Since epidemiologic data pointed to milk as a possible vehicle of infection, it was examined and on four occasions bacilli with the characters of *B. flexneri* were isolated. Instructions were issued for all milk to be boiled. In spite of these instructions, cases of dysentery from which *B. flexneri* was isolated continued to occur among the bed patients. It was noted that these cases were occurring only among persons whose diet contained a high proportion of cream which was neither pasteurized nor boiled. The use of cream was prohibited, and since then no case of dysentery has occurred. Bevan in 1941 had shown that the chief cause of infantile mortality in South Africa is "infantile diarrhea." There is no doubt that this condition is a dysentery. The importance of boiling all milk unless pasteurized cannot be overemphasized. The average South African native looks on a mild dysentery as being more beneficial than otherwise. As the bulk of the milk supplies is handled by natives, it is not difficult to conceive how milk can be infected by a milk handler who may be a carrier of dysentery bacilli.

Schweizerische medizinische Wochenschrift, Basel

72 1429-1456 (Dec. 26) 1942 Partial Index

- Reading of Roentgenograms W. Jaeger —p. 1429
Corpus Luteum and Vitamin E in Imminent and Habitual Abortion F. Ludwig —p. 1431
Galactorrhea and Corpus Luteum C. Müller —p. 1433
Acute Yellow Atrophy of Liver During Childhood O. Geiser —p. 1434
Desert Sore A. I. Vischer —p. 1436
Technic of Blood Transfusion and Intravenous Drip in Infants and Small Children Margrit Esser —p. 1438

Desert Sore—Vischer states that desert sore, or "Gallipoli sore," observed during the first world war in British troops in Palestine and at the Dardanelles, was seen by him recently among German and Italian prisoners of war in Egypt. These pyodermic sores resemble somewhat varicose crural ulcers except that they are found not only on the legs but also on the knees, hands, arms and the head. The sores are usually initiated by insect bites or scratches and begin as papules which become fairly large blisters containing first a yellowish and later a turbid secretion. When these blisters burst, slowly growing and profusely secreting ulcers form. The healing process is extremely slow. The sores occur chiefly during the summer, when insects are most annoying. The fact that lack of water in the desert prevents the cleansing of the sweat saturated skin is probably a factor. Troops whose general condition has been impaired by great exertion and desert heat seem to be especially subject. The native Arabs and native Libyan soldiers are free from them, they are somewhat less frequent in Italian than in German and British soldiers. The bacteriologic examination of the ulcers reveals chiefly staphylococci and streptococci and occasionally diphtheria bacilli. The diphtherically infected ulcer has a dirty gray coating and occurs as a rule only when pharyngeal diphtheria exists among the troops. Diphtherial ulcers are followed by paralysis, sometimes two or three weeks after healing. Immobilization of the involved area promotes healing of the sore. Prompt attention to small epithelial lesions prevents them. In South Africa desert sore is known under the term "veldt sore." Other terms for it are barcoo rot or septic sore.

Bol. de la Asoc. Med. de Puerto Rico, Santurce

35 215-252 (June) 1943 Partial Index

- Modified Friedman's Test for Pregnancy Preliminary Report R. I. Stokes and J. E. Ortiz —p. 215
Vogt-Koyanagi's Syndrome L. J. Montalvo Durand —p. 218

Vogt-Koyanagi's Syndrome—According to Montalvo Durand this syndrome is rare. The most important symptoms are nontraumatic bilateral uveitis, premature graying, alopecia, symmetrical vitiligo, especially on the hands, wrists and feet and dysacusia. The cause is unknown. Japan is the place of

greatest incidence. The disease develops most frequently in persons between 30 and 40. Syphilis and tuberculosis have a certain contributory significance in the development of the disease.

Klinische Wochenschrift, Berlin

21 425-444 (May 9) 1942 Partial Index

- *Administration of Vitamin K in Hepatic Function Test L. Armentano and F. Geher —p. 425
Effect of Mannitol on Liver G. Sabatini and D. Gigante —p. 429
Toxic Effect of Extracts from Posterior Lobe of Hypophysis E. Werle, O. Koch and H. Voss —p. 431
Biologic Mode of Reaction of Seroa Epithelium K. Niessing —p. 432
Preliminary Report of Results of Pulmonary Function Test in Bechterew's Disease W. Zens and F. Peters —p. 435
Importance of Carbonic Acid in Blood Coagulation F. Widenbauer and Ch. Reichel —p. 436

Administration of Vitamin K in Hepatic Function Test—Armentano and Geher used Koller's vitamin K test as a test of hepatic function. In the majority of cases of obstructive jaundice the prothrombin time was restored to normal within twenty-four hours after administration of vitamin K. There were isolated cases in which the normal value could be obtained only after repeated administration of vitamin K in the course of three days. Normal values in hepatocellular jaundice, provided the prothrombin values are very low, may be obtained only after all symptoms of the disease have disappeared. Existence of a severe hepatocellular icterus is suggested when prolonged prothrombin time is not restored to normal by one to three vitamin K injections (30 mg. for each of them). Low prothrombin levels were not demonstrated in all of the cases with partial obstruction of the common bile duct. In obstruction by stones associated with cholangitis the prolonged prothrombin time can be restored to normal by methenamine injections, which result in liberation of vitamin K following the destruction of colon bacilli. In cases with cardiac decompensation and enlarged liver low prothrombin values are found which were spontaneously increased with restitution of compensation. Failure to restore compensation by administration of vitamin K may signify the presence of a beginning cirrhosis. A true picture of the prothrombin amount is revealed on determination of the prothrombin curve. That is particularly demonstrated in chronic hepatocellular icterus. Prothrombin values below 20 per cent are not always associated with spontaneous hemorrhages. These may be caused not only by lack of prothrombin but also by the increased permeability of capillaries. The prothrombin time was demonstrated to be normal in cases of symptomatic hemophilia and in all cases of hemorrhagic diathesis with the exception of 1 case of thrombopenic purpura. The shortest prothrombin time was found in a case of hemophilia. The prognostic value of the vitamin K test in liver disease is emphasized. Recovery occurred in all cases with normal prothrombin time and in cases in which prothrombin time was readily restored to normal by vitamin K administration. Yellow atrophy of the liver was suspected in a case with a low prothrombin level. Clinical signs of the condition became manifest somewhat later.

Medicina Española, Valencia

6 375-500 (April) 1943 Partial Index

- *Parathyroprival Tetany J. A. Lamelas, Diaz Prieto, Rabago —p. 376
Postarthritic Static Defects J. Carrera Lorenzo —p. 389
Menopausal Psychosis D. T. Alcover —p. 394
Deficiencies Caused by Medical Diets T. Cervin —p. 400
Infantile Kala Azar, Antimony and Reticuloendothelial System I. Boix Barrios —p. 412
Late Results of Radium Therapy of Cancer of Uterus S. Monmeneu Jorro —p. 446
Hemianopsia Caused by Lesion of Posterior Cerebral Artery E. Arques Gironés —p. 456
Stuka Treatment of Bleorrhagia P. Navarro Sala —p. 460

Parathyroprival Tetany—Lamelas and his collaborators review the etiology and pathogenesis of parathyroprival tetany and report 2 cases which occurred among 87 persons operated on for goiter. The incidence of postoperative tetany, as reported by other surgeons, varies between 0.5 and 3.4 per cent. The authors evaluate treatment with parathyroid injection, with dihydrotachysterol, with vitamin D in the form of calciferol and with calcium. In mild cases a lactovegetarian diet together with calcium chloride or calcium lactate and vitamin D is sufficient, in severe cases and during attacks, parathyroid injection or dihydrotachysterol should be employed.

Book Notices

Stuttering Significant Theories and Therapies By Eugene F Hahn
Foreword by Sara Stinchfield Hawk Cloth Price \$2 Pp 177 Stan-
ford University Press London Oxford University
Press 1943

This is an important book. The author has achieved a number of desirable ends in his compilation of the various theories of and therapies for stuttering. He has selected almost all the authorities in the field of speech pathology, including eight from abroad and to assure the complete accuracy of his data he has had them either write their own digests of their respective points of view or edit the digests which he prepared. It is not within the province of a reviewer to go into the merits of the different theories and therapies discussed. However, a few examples of the diverse procedures employed in treating stutters—loud sighs 'release of the adduction action of the vocal cords' thought training exercises, "breath chewing", psychoanalysis, building up visualization building up a one lead dominance, voluntary stuttering acquiring "skill in controlling the form and duration of the stuttering reaction" influencing the disturbed metabolic mechanism of the stuturer—will give the reader some idea of the confusion which exists in the field. The twenty five digests are clearly and concisely written and in toto, present an excellent summary of all the important theories on stuttering. An appendix and an index complete the book. In the appendix the author stresses the advisability of employing a variety of therapeutic measures in the treatment of the stuturer and gives in detail a number of clinical procedures which he and others have found useful. Thus the book offers much valuable material to the teacher or clinician who wishes to correlate theory and practice. This volume should be required background reading for all who are interested in the stuturer's problem. In fact, the authorities whose theories are presented in the book should have it on their must list. Comparative study is an important step toward clarification.

These Mysterious Rays A Nontechnical Discussion of the Uses of X Rays and Radium Chiefly in Medicine By Alan L Hart M.D.
M.Sc. (Med.) Cloth Price \$2.75 Pp 218 with 28 Illustrations
New York & London Harper & Brothers 1943

No doubt many radiologists have wished they might write a popular book on x-rays which would be acceptable to the medical profession and provide attractive reading for the public. The author has succeeded enviably well in combining skill in writing with a vision born of long experience to produce a highly readable and dependable book on radiology for popular consumption. It sets forth important facts regarding diagnostic and therapeutic radiology in nearly nontechnical language. The author has succeeded in taking much of the mystery out of the topic by the use of a clever conversational style. There is a general discussion on the employment of the x rays and radium in medicine and a general review of the problem of cancer, the use of ultraviolet radiation and the application of x-rays and radium in industry and certain medicolegal topics. Practical advice is given concerning cancer quacks and commercial x-ray laboratories. The author has done radiology a great service in providing this convenient and useful volume. It would be a valuable and popular addition to the literature on the waiting room table in any radiologist's office.

Medical Parasitology A Laboratory Manual By Jacques Letwin B.Sc. M.S. M.D. Associate Professor of Parasitology Middlesex University School of Medicine Waltham Mass Third edition Paper Pp 130 with 62 Illustrations Waltham Mass The Author 1944

This loose leaf booklet is printed as a guide to a twenty hour course in parasitology for medical students. Numerous blank pages are interspersed for lecture and laboratory notes. Sixty two illustrations accompany the directions for laboratory exercises. Morphologic details and parasites of little or no medical importance receive undue emphasis. Instead, greater stress could well have been given to the life cycles and methods of diagnosis of the important parasites. It is unlikely that this manual will be of much value to any students other than those taking the particular course for which the directions were written.

A Workbook of Elementary Pharmacology and Therapeutics (Including Drugs and Solutions) By Luella C Smith R.N. B.S. Instructor in Science Methodist Hospital, Indianapolis Second edition Paper Price \$2 1p 300 St Louis C.V. Mosby Company 1943

This embryonic manual gives a sad impression of grade and high school education. That so much drill in simple arithmetic is needed is a sad commentary. The book has 300 pages, of which 184 are occupied with such diversions as changing $\frac{3}{4}$ to percentage or answering "How much 10 per cent sodium bicarbonate is needed to make a quart of 5 per cent?" Ignorance of simple arithmetic has been found also in pharmacy, in dentistry and in medicine. Yet the demands for entrance would qualify for a university president. Since the book deals with remedies and their administration, one may wonder why there is no suggestion of how to stimulate better scholarship in the grade and high school, such as the elimination of coddling devices and the introduction of means of promoting toil, sweat and study.

Teachers in all schools are aware of the deficiencies in the students, and to give credit where due we think that the training, though quite deficient, is better than in the past and is improving. The author recognizes the student's deficiency and instead of useless fault finding sets out to correct it.

The book is divided into thirty eight chapters or exercises, very elementary, yet important. Addition, subtraction, simple fractions, multiplication, division, improper fractions and similar grade school work is reviewed. More pertinent is the work on weights and measures, and the relationship of the metric and apothecary systems.

Because some doctors write prescriptions in Latin, she gives a list of abbreviations and their meaning but the connection between the abbreviation and the Latin words is a void, and the whole devoid of anything educational.

Medical men are to blame for much of this nonsense. And strange to say, medical men who best know Latin use it least. They have the good sense to keep dark the fact that if they are Latin scholars it usually is at the expense of less knowledge of medicine and pharmacology.

The greatest service of this work book is in illustrating defects in our whole system of education. The author sees students as they are, not as their qualifications state. Recognizing their deficiencies, she applies the treatment that is indicated. Students who are deficient in simple arithmetic are not likely to benefit from lectures on the pH of solutions or in logarithmic variations.

Under the present conditions this quite elementary book may be used as a review by students in the basic medical sciences. One or two weeks might be spent on it as a review, with profit. If more time is needed, the students are hopelessly incurable.

The content of Pharmacology and Therapeutics is too meager to deserve the title. The U.S.P., N.F., N.N.R. and Useful Drugs are given as references.

Communicable Diseases for Nurses By Albert G. Bower M.B. M.S. M.D. Head of the Department of Communicable Diseases and Clinical Professor of Medicine University of Southern California Los Angeles and Edith B. Pflant R.N. Director of Nursing Los Angeles County Hospital with the assistance of Wilton L. Halverson M.D. D.P.H. State Director of Public Health for California Fifth edition Cloth Price \$3 Pp 192 with 83 Illustrations Philadelphia & London W.B. Saunders Company 1943

Although the book is intended primarily for the nurse, its scope should make it useful also for the medical student and practicing physician. Nursing procedures are given in detail and all the common communicable diseases are presented concisely with references at the close of each chapter. Many additional infections less often encountered in this country but now of special interest because of war conditions receive attention. There are chapters concerning yellow fever malaria dengue plague, cholera and typhus. Of the total fifty-seven chapters fifty-one relate to different diseases. Among the others is an excellent discussion of the sulfonamides in this edition. Numerous illustrations and fever charts are of added value and a glossary of medical terms will be convenient for the student. Any one interested in communicable diseases will appreciate the authors work and the manner in which it is presented by the publishers.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HEADACHES ASSOCIATED WITH PREGNANCY AND ENDOCRINE THERAPY

To the Editor—A white married woman aged 32 has complained of frequent headaches for the past ten years. These attacks have had no definite association with the menstrual flow as to the time of their occurrence. The sinuses were found to be involved at one time, but these show no disease at present that can be demonstrated by x-ray or physical examination. There has been slight hypotension, and a basal metabolic rate of minus 10 has been obtained on two occasions. During two pregnancies there has been complete relief from headaches after the third to fourth month. These did not return until a month or so following delivery in each instance. This suggested the possibility that relief might be obtained by the use of endocrine therapy, but I have been somewhat uncertain which would be the best preparation to employ. Fairly immediate relief of the individual attacks is obtained by the use of small injections of ergotamine tartrate.

Major, M. C., A. U. S.

ANSWER—The fact that an illness is relieved during pregnancy does not necessarily imply that endocrine preparations will relieve the illness during the nonpregnant state. During gestation there is a pronounced and progressive increase in the amount of estrogen in the circulating blood and in the urine throughout the entire ten months. In addition there is a precipitous increase in the amount of gonadotropic hormone during the first two months of pregnancy, a gradual drop during mid-pregnancy and then another moderate increase toward the end of pregnancy. The available commercial preparations of pituitary are in general unsatisfactory. Of the estrogens there are many excellent and potent products. However, the administration of even large amounts of estrogen has failed to relieve women of ailments which spontaneously remain in abeyance during pregnancy. Such therapy has been tried for women afflicted with migraine, asthma and other conditions which were troublesome in the nonpregnant state but absent during gestation. Unfortunately, the results have not been satisfactory.

A diametrically opposite type of treatment has also been tried. Some women with migraine who were free of the affliction during one or more pregnancies have been castrated by roentgen therapy in the hope that elimination of ovarian function would cure the migraine. The results have been disappointing.

TACHYCARDIA, TUBERCULOSIS AND ALTITUDE

To the Editor—A man aged 32 with moderately advanced bilateral pulmonary tuberculosis has been at complete bed rest for the past two years. His pulse on waking is 78-84, it regularly increases to 102-106 during the day, and if he sits up in bed in the evening it goes to 116-120. A few extra-systoles are present but no murmurs or cardiac enlargement, the red count is 5,600,000, white count 8,000, hemoglobin 103 per cent, blood pressure 118/85, maximum daily temperature 99.6 F. According to a tuberculosis specialist his tuberculosis is "insufficient to account for the tachycardia and may be due to a slight degree of hyperthyroidism." Blood cholesterol is normal. The patient desires to continue his treatment in Colorado or New Mexico and wishes to live in one of three towns situated at 4,900, 5,900 or 6,400 feet altitude. To reach the first would necessitate passing through (by train) elevations as great as 8,000 feet. His present altitude is 1,000 feet. Should his journey be broken to allow him to adjust to the increasing elevation and if so how often and for how long should each stopover be?

M. D., Oklahoma

ANSWER—Under the circumstances there need not be undue concern regarding the change of altitude. The patient may go direct to his destination. There will be no doubt a slight increase in the symptoms for a short while, but an adjustment will soon occur as it has with the thousands of other tuberculous patients who have made a similar change in altitude over the last fifty years. It would seem highly desirable that the diagnosis should be cleared before any move is made. Hyperthyroidism should be found if present. The same may be said with respect to severe cardiac or other common conditions.

The whole process, however, may be only tuberculosis. It is well to bear in mind that with all the facilities available one cannot see all tubercle-bearing tissue in the body and that sometimes small pulmonary lesions may be associated with extensive hilar lymph node and extrathoracic involvement. As long as symptoms are present the patient should receive treatment in anticipation of the healing of "occult" lesions even if the visible lesions have disappeared.

PROPYLENE GLYCOL NOT BACTERICIDAL IN CIGARET SMOKE

To the Editor—Because glycerin is more important in making explosives than in keeping tobacco moist the humectant now used in many cigarettes is diethylene glycol or a derivative thereof. As propylene has been shown to be of value in keeping down the bacterial content of air, is it likely that its use in cigaret tobacco might be similarly effective in the upper respiratory tract?

M. D., Massachusetts

ANSWER—The vaporization of propylene or any other glycol in a burning cigaret would have no effect on bacteria in the respiratory tract for the reason that propylene glycol is not bactericidal in dilutions of less than approximately 50 per cent. The reason propylene glycol vapor is bactericidal in such minute concentrations in the air is that the molecules of the glycol striking the small bacteria-containing droplet quickly build up a concentration of glycol within the droplet of 50 to 80 per cent. To produce such a concentration of propylene glycol in the fluid on the surface of the respiratory mucosa would require a relatively enormous amount of glycol—much more than could be inhaled even by breathing a fog of this substance.

CORONARY HEART DISEASE IN PAINTER AND LEAD IN TISSUES

To the Editor—A white man aged 36 was suddenly seized with severe precordial distress. Physical examination did not reveal any abnormal findings. The pain was diffusely spread over the left side of the chest and was not helped by hypodermic morphine and papaverine. He died suddenly about four hours after the onset of the angina. At times, when the pain was not so severe, his blood pressure was taken and was found to be 150/110 mm. of mercury. Questioning was limited but it did reveal that he had been a painter for sixteen years and during the past few years had been troubled frequently by diffuse headaches. At autopsy a severe degree of atherosclerosis of the coronary vessels was found. At one point this sclerosis almost occluded the right coronary artery 1.5 cm. from its origin. Microscopic study did not reveal any significant degeneration in the heart, kidneys, liver or brain. However, chemical analysis of the various organs for quantitative lead revealed the following values:

Mg. per 100 Gc.

Liver	0.61
Vertebra	3.16
Brain	0.197
Blood	0.043
Intestinal contents	0.517

The problem which presents itself is to determine, if possible, the relationship between the increased amounts of lead present in his tissues, his occupation and the coronary sclerosis and coronary spasm. Did the post mortem findings prove or disprove the question of occupational disease?

M. D., New York

ANSWER—This man died probably as the result of a rather extensive degree of coronary heart disease. In all probability he would have had angina pectoris on effort before his death if he had exerted himself, quite likely he did have angina pectoris.

It is improbable that his occupation as a painter and the lead found in his various tissues had any direct relationship to his coronary heart disease. Only rarely indeed is a history of exposure to lead found in patients with angina pectoris and coronary heart disease even at his age, and it is uncommon for young painters to have angina pectoris. Lead does not actually predispose to arteriosclerosis. Dr. Joseph Aub in his monograph on lead, pages 71 and 72, refers to a painter who was killed while at work by a fall and who showed much the same concentration of lead in his tissues: liver 0.68, skeleton 7.16, brain 0.22 mg. per hundred cubic centimeters. He had always been well and there had been no symptoms.

Dr. Aub has commented on the concentrations of lead in the case presented in this query. He thinks that the concentrations are not high enough to justify the diagnosis of active lead poisoning, being simply representative of a painter who has absorbed some lead.

SUDDEN DEATH AND ANESTHESIA

To the Editor—On page 1215 of The Journal of Aug. 21, 1943, the statement is made that "apnea or depletion of carbon dioxide can cause death only through the failure of breathing." On the contrary, such apnea as is caused by irregular ether anesthesia, as in the case under discussion, is generally due to failure of the circulation. I demonstrated this in many papers in the American Journal of Physiology and some in The Journal which are summarized with full references in my book "Adventures in Respiration: Modes of Asphyxiation and Methods of Resuscitation," published by Williams & Wilkins Company, Baltimore, 1938.

If that patient had been treated with carbon dioxide and oxygen she would almost certainly be alive today.

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DISORDERS AND LESIONS OF THE MALE URETHRA

OFFICE PROCEDURES

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ATLANTA, GA.

AND

LIEUTENANT REESE C. COLEMAN
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Disorders of the male urethra are the cause of many disturbing symptoms. They are due chiefly to inflammatory conditions, obstructions and hyperemia or hyperesthesia. These disorders manifest themselves chiefly as abnormal discharges, urinary irritation and sexual disturbances. Inflammation and obstructions are intimately related. By this is meant localized inflammatory processes tending to produce fibrosis and obstructions in the areas so affected. It is equally true that obstructed areas in the urethra, whether congenital or acquired, tend to harbor infection. Each tends to perpetuate the other, inflammation produces fibrosis and obstructions, which in turn hinder the cure of infected areas. Considerable judgment is required at times, especially in chronic recurrent inflammation, to determine the correct plan of treatment. Formerly it was deemed inadvisable to dilate inflamed areas in the urethra even though an obstruction was known to be present and keeping up the inflammation, since the advent of sulfonamide compounds, however, with their remarkable germicidal qualities, this view has undergone a decided change. The danger of bringing about the complications formerly feared by dilating obstructed areas no longer obtains, at least in those cases in which the infection is well controlled by one of the sulfonamide drugs. In consequence now the vicious circle often may be broken by dilating the obstructions which tend to keep up the infection. It naturally goes without saying that the instrumental dilation should be done with care and at first should be limited to the anterior urethra, furthermore, it should be carried out during the time in which the sulfonamide drug is being administered.

These rather radical views would not be advised had we not been impressed repeatedly with the manner in which urethral infections disappear when treated simultaneously with the dilation of obstructions and the administration of sulfonamide drugs.

This paper is a symposium on Office Treatments in Urology published under the auspices of the Section on Urology.

GONORRHEA

It is recognized that many urologists do not treat venereal diseases. The treatment of gonorrhea, however, is an office procedure which merits careful consideration of those who do treat it.

In the treatment of gonorrhea we recognize three groups: (1) those in whom the discharge has not been present for more than forty-eight hours, (2) those in whom the discharge has been present for more than forty-eight hours, (3) those in whom the discharge is chronic or recurrent and perhaps with complications.

Acute Gonorrhea, When the Discharge Has Been Present for Less Than Forty-Eight Hours—If the infection is of recent origin with the usual incubation period, and if the discharge has not been present for more than two days, a high percentage of prompt cures may be obtained by the combined use of sulfathiazole orally and a 5 per cent solution of mild protein silver sealed in the anterior urethra once a day for four days. The sulfathiazole should be administered in doses of 1.5 Gm each, four times a day for the first two days, then 1 Gm four times daily for the next two days. The 5 per cent solution of mild protein silver should be freshly prepared each day. The patient urinates, the meatus is washed, and 1.5 cc of the solution is injected into the urethra and retained with clamps. Collodion is applied with a camel's hair brush to the meatus and surrounding glans penis. The most satisfactory clamps are those used in laboratories for holding test tubes. When the collodion has dried, the clamps are removed. A condom is then placed over the penis and the patient is instructed to postpone urinating for four hours if possible. Straining efforts which might cause the solution to escape should be avoided. U.S.P. collodion (nonflexible) should be used. The treatment is administered once a day for four days. During this time the sulfathiazole is continued as described.

All treatment is discontinued after the fourth day. Careful observation is then begun. If there is no return of discharge within a week the patient is permitted to make a test with alcoholic beverages if he so desires. If, for another week, no discharge appears, a urethral sound is introduced as a further provocative test. If this procedure does not cause a return of discharge or cloudiness of the first glass of urine, treatment is still omitted but the patient is observed from time to time for four weeks longer, during which additional sounds are introduced into the urethra. If at the end of this time there is no discharge and the urine is clear, the patient is told that he is well. So far we have not seen a recurrence when these tests were negative.

Let us again emphasize the fact that this plan of treatment is not employed for patients whose discharge has

been present for more than forty-eight hours or when the incubation period was not within the normal limits.

The prospect for a prompt cure is less favorable when coitus has occurred during the incubation period or when urethral strictures are present.

When the Discharge Has Been Present for More Than Forty-Eight Hours—Under these circumstances the chances are about 80 to 90 per cent that a cure may be effected within two weeks or less by sulfathiazole. This of course implies that the patient can tolerate the sulfonamide drug in doses of 1 Gm. three or four times a day preferably after meals and after a glass of milk at bedtime. For those who cannot take the recommended dose of sulfathiazole the amount may be reduced and yet may be effective. Here supplementary measures such as the usual urethral irrigations and injections should be employed. In spite of such routine care there will be a percentage of failures which require additional measures. What these shall be naturally depends on the extent of the failure and its most likely cause or causes. If it seems that the gonococcus appears to be of the resistant type, a change to sulfadiazine or to sulfapyridine may at times be of value. If these are not effective in controlling the infection mild routine measures should be patiently used until it seems safe to ascertain whether or not there is an obstruction or a pocketed area in the anterior urethra acting as a retarding factor. Of course, such instrumentation should never be undertaken when there is a complication such as cowperitis, prostatitis, seminal vesiculitis or epididymitis.

Chronic or Recurrent Gonorrhea—This requires unhurried efforts to ascertain the factors which retard the elimination of the infection.

Probably the commonest causes of failure to obtain reasonable satisfactory cures with sulfathiazole are stopping the drug too soon and pocketed infection in the glands of Littre or at urethral strictures.

Prognosis—The time required to cure a patient with acute gonorrhea varies with (a) the promptness with which treatment is started (b) the type of treatment employed and (c) the response to treatment.

The quickest cures are obtained with the combined use of sulfathiazole and mild protein silver sealed in the anterior urethra. This plan should be employed only when the patient reports for treatment within two days after the urethral discharge appears. After the infection has become well established, uncertainties as to the time for eradication are increased. They concern the tolerance of sulfathiazole, urethral strictures, the development of complications, the existence of pocketed areas in which the micro-organisms may have become entrenched and to drug resisting qualities developed by the gonococci.

The danger of infection being carried to the eyes by accidental transference is slight, but patients should be warned of the possibility and urged to exercise care in preventing such infection. Complications such as epididymitis and prostatitis are much less frequently seen in patients who are treated with sulfonamide drugs than in those who do not or cannot take them. Dosage at four hour intervals is recommended, as the blood concentration is kept more constant thereby.

Ambulatory patients who are taking sulfonamide drugs should be warned of the possibility of nausea and dizziness. Particularly should this be called to the

attention of airplane pilots, railway engineers, bus drivers and persons similarly employed. Drug fever is seen occasionally, it promptly disappears with the omission of the drug and forcing of fluids. Skin rashes are not uncommon and may take many forms. Acute agranulocytosis and hemolytic anemia are rare, when suspected blood counts and hemoglobin determinations should be made promptly and the drug discontinued if a definite decrease of red or white cells is noted.

NONSPECIFIC URETHRITIS

In the great majority of cases nonspecific urethritis is due to an obstruction at the meatus or in the urethra or to infection in pocketed areas such as in the glands of Littre or Cowper's gland, the prostate or the seminal vesicle. A small meatus or a stricture of the urethra tends to cause extension of infection into pocketed areas or "dugouts," from which its eradication requires a higher degree of immunity or a greater germicidal effect from medical measures than is required if the infection is limited to smooth mucosa.

For many years our most satisfactory treatment of nonspecific urethritis has been by meatotomy when the meatus is small, and by the dilation of strictures when they are present. No longer are astringent injections or irrigations employed. More prompt and more lasting benefit is obtained by establishing a normal caliber of the urethra and less frequently by electrical coagulation of infected glands of Littre. Of course attention is given to the prostate and seminal vesicles when needed. Endoscopic treatments are not used except when the other measures have failed, they usually are needed only when the glands of Littre harbor gonococci. In addition to these measures sulfonamide drugs, preferably sulfathiazole, are simultaneously employed.

Poor kidney function and obstructive lesions of the urinary tract are contraindications to the administration of large doses of sulfonamide drugs. If such lesions are suspected, or if large dosage is contemplated renal functional tests should precede the administration of sulfathiazole.

MEATOTOMY

Adequate diagnosis and treatment of urethral disorders is not feasible through a small urethral meatus. By a small meatus is meant one which will not admit a 26 F. bulb. In such cases meatotomy is necessary for diagnosis as well as for treatment of the usual urethral disorders, such as chronic recurrent urethritis, deep urethral irritation and strictures.

Enlargement of the urethral meatus is accomplished with little discomfort by incision after the injection of 1 per cent solution of procaine hydrochloride into the tissue between the meatus and the frenum. After the meatus is incised to 30 F., as indicated by a bulbous bougie, the urethra should be tested for strictures by the introduction of bulbs. A sound one size smaller than the largest bulbous bougie which would pass through the anterior urethra is then introduced through the deep urethra. The sound is removed, and to the incised area at the meatus Monsell's solution is applied with a cotton swab. This stops bleeding and lessens the discomfort when the urine is voided. The patient is instructed to introduce a glass rod, such as is attached to the stopper of germicidal solutions, about $\frac{1}{2}$ or $\frac{3}{4}$ inch into the urethra and press downward to prevent the cut surfaces from growing together. This

procedure is carried out by the patient every night for about ten days until the mucosa has covered the incised surface. Meatotomy thus carried out affords excellent results.

URETHRAL STRICTURES

Strictures of the urethra, bottle necks in this urinary passageway, are of common occurrence. They may be congenital, acquired or both. The scope of this paper does not permit a discussion of the various types of strictures or of the details of the inflammatory changes and chemical or traumatic injuries which produce the acquired fibrotic narrowing of the urethra. It seems more desirable to discuss the ill defined symptoms and management of strictures amenable to office treatment.

The recognition of a narrow point in the urethra is so easy and so important that even the most casual examination, unless the urethra is acutely or subacutely inflamed, should include the introduction of bulbous bougies into the anterior urethra. In no other manner can it be known that the urethra is normal in caliber. Sounds are not of value in the diagnosis of urethral strictures, and the symptoms may be wholly misleading. Obstructions of fairly large caliber may be associated with and causing a chronic "gleety" discharge which will not clear up until after the stricture has been dilated. The same may be said of low backache and of postpubic or pelvic discomfort. Itching along the urethra or in the perineum results more frequently from urethral strictures than from all the other causes. Frequency in urination, "nervousness" and sexual disturbances are not uncommon symptoms of urethral strictures. The rather surprising thing about all these vague symptoms of urethral strictures is that they do not vary in proportion to the narrowness of the stricture.

While strictures of medium and large caliber may be attended by a chronic or recurrent urethral discharge, strictures of small caliber may not cause any abnormal secretion. Retention of urine, partial or complete, after exposure to cold, sexual excess, alcoholic excess or voluntary retention beyond the usual time may result from strictures of fairly large caliber.

Periurethral abscess, fistula and urinary extravasation may arise from neglect of strictures or from false passages produced by instrumentation.

Following transurethral resections of the prostate strictures of the urethra which previously had given little trouble are quite likely to require dilation. This should be started about ten days after the resection.

The treatment of strictures should always begin with a meatotomy when the meatus will not admit a 26 F bulb.

Gradual Dilation of Urethral Strictures—Treatment by gradual dilation is the method of choice in the management of urethral strictures. The dilation should be so gradual that at no treatment is the trauma sufficient to require repair by scar tissue. Dilation with sounds is safer than with the Kollmann dilator. Gentleness and care in the passage of urethral sounds are of prime importance. The hurried passage of a sound increases both pain and the likelihood of making false passages. For patients who are unusually nervous or whose urethras are very sensitive, anesthetic jelly injected into the urethra and gently pressed into its deeper part reduces decidedly the pain caused by

urethral instrumentation. After the injection of the anesthetic jelly a clamp is placed near the meatus and the jelly allowed to remain in the urethra for about five minutes. K-Y jelly is then injected into the urethra and the sound slowly passed. If the stricture will not admit a 22 F sound it is preferable to use a Phillips tapering bougie. If this cannot be passed, an effort should be made to introduce a filiform, woven or whalebone. What plan to follow in case success attends this procedure depends on the difficulty experienced and on whether or not the urethra is sufficiently dilated to permit voiding urine. If one is in doubt, the filiform may be tied in the urethra, where it may be allowed to remain for several days. Patients nearly always void satisfactorily around such retained filiforms. Subsequent dilations are likely to be easy if no false passages are made. Whether hospitalization of the patient and an operative procedure should be carried out must be determined by a consideration of the patient's general condition and by local complications such as fistulous tracts or abscesses.

DISORDERS OF THE DEEP URETHRA

Acute inflammation of the deep urethra is readily recognized by the painful symptoms referable to this area, frequency in voiding and pus in the last part of the urine. In such inflammation the prostate gland inevitably also is involved. Sulfonamide drugs now control infection of this part of the urethra most of the time so well that little more than these drugs, hot baths and palliative measures are required. Attention to the prostate, however, is indispensable in the management of inflammation of this area.

It is mainly with chronic disorders of the deep urethra that this discussion will deal. Here is the meeting point of the urinary and sexual tracts in the male. It is not surprising, therefore, to find in this region disorders causing bed wetting in childhood, masturbation in youth, inflammatory processes and sexual disturbances in adult life and urinary obstruction in old age.

Among the lesions commonly seen in the prostatic urethra are papillomas, cysts, bullous edema, diverticula, false passages, varicose veins, angiomas, bands, bars, valves, fibrous contractions, urethritis and other abnormalities of the verumontanum, elongation or distortion produced by hypertrophy of the prostate gland and abnormalities which result from transurethral resection of vesical neck obstructions.

These lesions are readily recognized when seen through the McCarthy panendoscope. Hyperemia and hypersensitive conditions, which are the commonest of the deep urethral disorders, are readily detected by the passage of urethral sounds. Nearly all sexual disturbances arise from endocrine deficiencies and from lesions of the verumontanum while practically all obstructions are found back of it.

Failure to recognize the disorders of this vulnerable part of man's anatomy is due largely to failure to suspect them as being associated with the more or less ill defined symptoms produced.

Hyperemia and hyperesthesia of the deep urethra respond so well to treatment with sounds and instillations of 1 or 2 per cent solution of silver nitrate that more elaborate diagnostic measures than response to treatment are not required. If later this tentative diagnosis is shown to be inadequate, urethroscopic studies

may then be made with less discomfort than if preliminary dilation with sounds and instillations had not been employed

The cutting current is generally used for correcting gross lesions of the deep urethra, congenital or acquired, such as valves, bars, bands and fibrous contractions. The coagulation current is used for small papillomas, cysts and varicosities.

The Verumontanum—As the verumontanum is a very sensitive part of the prostatic urethra and is pressed on by muscular contractions of this area, disturbances of the verumontanum result in a variety of urinary and sexual symptoms. Unless suspected as the cause of these symptoms, the sensitive verumontanum may not be regarded as their cause. The anatomic position of the verumontanum made it inaccessible for observation with the ordinary cystoscope and it was not until the advent of the close vision cystourethroscope that accurate observation and studies of this area were made. Even today lesions of the verumontanum and the utricle are recognized less frequently by urologists than are the common bladder and renal disorders.

The pathologic changes most frequently noted are hyperemia, hyperesthesia, adhesions, cysts, neoplasms and strictures of the ejaculatory ducts. Associated with some disorders of the verumontanum are urethral obstructions and chronic prostatitis.

The symptoms of disorders of the verumontanum are postpubic or deep perineal itching, discomfort or pain, urinary frequency, nervousness or sexual symptoms such as premature emissions or impotence. Enuresis and excessive or prolonged masturbation in boys should suggest the possibility of an abnormal condition of the deep urethra or verumontanum as a causative factor. Occasionally persistent infection may result from infection in the utricle.

The most common condition caused by abnormalities of the verumontanum is sexual "neurosis" or sexual "neurasthenia." This is often associated with a mental disturbance or "nervousness" all out of proportion to the pathologic process causing it. And we say "causing it" advisedly for the reason that the symptoms disappear almost directly in proportion to the correction of the abnormalities of the verumontanum.

Unfortunately disorders in the prostatic urethra are not characterized by lesions always discernible by cystourethroscopic study. They are made just as obvious, however, by appropriate remedial measures. The cure of the multitude of ill defined complaints is quite as convincing as urethroscopic studies could be. By this is not meant that adequate studies should not be made but rather that, at times, and not infrequently, appropriate treatment with sounds and medication to the prostatic urethra will correct symptoms not assignable to any lesion sufficiently gross to recognize endoscopically.

Appropriate treatment of hyperemia and hyperesthesia of the verumontanum consists in correction of etiologic factors such as prolonged "necking" without sexual gratification, masturbation, withdrawal before emission and other such abnormal habits.

The urethra should also receive corrective treatment for abnormalities such as a small meatus and stricture if present. Even though no stricture is found, sounds should be introduced about once a week and allowed to remain in the urethra for about ten minutes. These tend to lessen the deep urethral hyperesthesia and

hyperemia and are of value whether or not urethral strictures are present. In three or four weeks the sound should be followed by an instillation of 2 cc of 1 per cent silver nitrate. In subsequent treatments the strength of the instillation should be increased gradually to about 2 per cent.

After tolerance to these treatments has been acquired and if symptoms still persist, cystourethroscopy should be made, at which time adhesive bands, cysts or polypoid growths should be corrected by the high frequency fulgurating current or with cystoscopic scissors. This is not the procedure to be employed for hyperemia or hyperesthesia of the verumontanum. Instead at a later treatment silver nitrate in a concentrated form is applied directly to the verumontanum through an endoscope. This is not done until tolerance of the deep urethra to instrumentation has been obtained by the introduction of sounds and by the instillations of silver nitrate. Application of concentrated silver nitrate (20 per cent) is facilitated by the use of an endoscope with rounded edges, not requiring an obturator. Observation is thus permitted as the endoscope is introduced. When the verumontanum comes into view the applications may be made without undue fumbling or trauma. For many years we have found that the discomfort incident to the application of concentrated silver nitrate to the verumontanum and deep urethra is greatly lessened by first applying a 50 per cent solution of phenol. This application is followed by a dry applicator, and then the application of silver nitrate is made. When preceded by suitable preparatory treatments these applications are rendered comparatively free from pain, both immediate and late. They are likely to be followed by frequency in voiding for three to twelve hours and occasionally by terminal hematuria. These mildly disturbing reactions however, are unimportant when compared to the benefit derived from the treatments. It is our impression that the applications of silver nitrate to the verumontanum is decidedly preferable to coagulation of this area with the high frequency current.

Let it again be emphasized that these applications should not be employed until after tolerance to deep urethral instrumentation has been induced by sounds and instillations of 1 and 2 per cent solutions of silver nitrate.

Vesical Neck Contracture—Following transurethral resection, contracture of the vesical neck has been observed not infrequently. This obstruction is in the form of an iris diaphragm-like fibrous ring at the internal urethral opening. Patients with this condition have symptoms of deep urethral irritation and slowing down of the stream after an apparent excellent immediate result. This diaphragm-like contraction is of fibrous tissue and is more likely to occur in patients following resection of small fibrous prostates than in those with adenomatous obstructions, also when the resection is carried too deeply in the floor at the region of the internal sphincter. For many years it has been our practice to do cystourethroscopies after transurethral resections. These examinations are made from two to four months after the resection. When fibrous contractures are observed we customarily use cystoscopic scissors to incise this fibrous tissue. Little pain is occasioned by this procedure and relief usually is immediate. Weekly dilation of the posterior urethra

with the Kollmann dilator is employed to prevent the recurrence of the contraction as herling takes place

Mild incontinence has been noted occasionally following transurethral resection. This condition varies from a slight weakness of the external sphincter which allows a few drops of urine to leak when straining or coughing to a real incontinence. Examination through the panendoscope reveals damage to the sphincter usually in the form of a small cavity or area of destruction on one side of and slightly anterior to the verumontanum. Light fulguration with the high frequency current directly over this area causes fibrous tissue formation which contracts the gap in the sphincter muscle and improves continence. Additional light fulguration at five to six week intervals may be needed to bring about complete continence. These treatments are usually carried out in the office, since only light fulguration is needed.

BACKACHE

Low backache in the male responds remarkably well to urethral dilation and massage of the prostate gland. Just why such results should occur we cannot say. Strange as it may seem, relief of low backache and pelvic discomfort often follows prostatic massage and the introduction of sounds even when the prostatic secretion shows few or no pus cells and strictures of the urethra are not detectable. Among the patients with low backache who come to urologists 50 per cent or more will respond to prostatic massage and the appropriate use of sounds and instillations of 2 cc. of 1 or 2 per cent solution of silver nitrate into the deep urethra.

ENURESIS

Unless bed wetting is caused by some definite condition such as a cord lesion, vesical neck obstruction with residual urine or from a stone in the bladder, the most dependable treatment is dilation of the urethra with sounds or bougies. As with adults, meatotomy should be done when the meatus is small. This plan of treatment is employed both for boys and for girls. The dilations are administered once a week and are usually the only treatment needed. The bed wetting usually stops after from one to ten treatments.

Occasionally in boys instillations of 1 or 2 per cent solutions of silver nitrate into the deep urethra after each treatment with the sound will be required. In boys 1 or 2 per cent solution of Intracaine is injected into the urethra before the sounds are introduced. This does not completely relieve the discomfort, but with gentleness, a few pennies and 'Popeye or football talk' the treatments nearly always may be carried out satisfactorily.

SUMMARY

Chronic urethral inflammations and irritations are most frequently associated with causative obstructions. Success in treatment often depends on the treatment of the inflammation simultaneously with dilation of strictures.

Disorders and lesions of the deep urethra are the cause of many of man's ill defined and disturbing complaints, especially those which concern pelvic discomfort, urinary symptoms and sexual impotence.

When employed with reasonable judgment and a fair degree of skill, treatment of lesions of the prostatic urethra usually respond satisfactorily.

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DYSURIA AND NOCTURIA IN THE PRESENCE OF NORMAL URINE IN THE FEMALE

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CINCINNATI

Recently we reviewed a series of 600 case histories in the female, our object at that time being to evaluate all etiologic factors that were directly or indirectly responsible for bladder symptoms. We were impressed with the unusually large number of urethral caruncles and made them the subject of a special report recently published. Probably as a result of that publication we were asked to continue our studies of the remaining cases of that series and report our findings in only those cases in which, although bladder symptoms were present, there was an absence of pyuria. To conform with this request we rechecked the histories of that series and eliminated 86 cases in which upper urinary tract involvement and obvious bladder disease such as tumors and stones were the basic etiologic factors in the production of bladder symptoms. This left 312 cases, in 160 of which pyuria and urinary tract infection were present and in 152 infection was absent. The latter group will be the subject of this report. We will briefly discuss some of the more common lesions found to be the causative factors in the production of bladder symptoms and will discuss in detail our methods of examination and refer briefly to therapeutic measures.

This review brought out two points of interest with which we are certain all urologists will agree. First, there is an apparent lack of interest shown in these bladder cases by the medical profession. Treatment is too often on a "pay as you go plan," and seldom is there any attempt at a local or physical examination. Second, when these patients after many years of suffering consult a urologist they expect him to have the knowledge also of the following specialists: dentist, gynecologist, internist, laryngologist, neurologist, orthopedist and proctologist.

We must face the cold fact that these patients come to us for relief. They are suffering with "sick bladders" and usually have been either inadequately, excessively or unnecessarily treated. It is our duty, not only to give them the benefit of our experience as urologists but to utilize our full knowledge of all specialties. We must not turn them away as being neurotic until that diagnosis is definitely established.

We try to impress on our medical students the necessity of obtaining an accurate history of all previous ailments with special reference to all bladder symptoms, previous operations (abdominal or pelvic), focal infections, menstrual cycles, personal habits such as food, drink and medication, and even the type of cigarettes used. We must bear in mind during this inquiry that we are dealing with a strange individual in a strange environment, pessimistic as to our ability to give relief, nervous with anticipation of probable painful instrumentation, and that foremost in her mind is the possibility that she may have a cancer.

METHOD OF EXAMINATION

When this patient has finished the story of her symptoms, and if we have been alert many more pertinent facts can be elicited from her with some of the following interrogations: Do you have this frequency both day and night? Do you get any relief following urination? Is your pain before, during or after urination? Do you have "loss of urine"? Is this loss more pronounced when you are on your feet or while in bed, or noted more during exertion, coughing or sneezing? Are your bladder symptoms aggravated during your menstrual periods? Do you have local discomfort while walking or when sitting? The replies to these and other interrogations will frequently assist us in our examination. We cannot gain the confidence or cooperation of the patient unless we sincerely regard her as an ill, suffering human being.

Our routine method of examination is as follows. The patient is given to an intelligent, sympathetic nurse, who places her flat on the x-ray examination table legs over the end, with her feet resting on a stool and her abdomen exposed. By this method we obtain satisfactory relaxation for palpation with special reference to localized or general pain or abnormalities, we can inspect for operative scars and, if so desired, can elevate or lower the table for general physical examination, including teeth, tonsils and x-rays. She is next placed in the lithotomy position and prepared for inspection of the external genitalia and urinary meatus. Urethral caruncles are one of the most frequent causes of symptoms, and in this position any of the various types located on the external urinary orifice can be easily identified. The examining physician must not be misled with a negative finding externally. It has been our experience that there are many caruncles located immediately behind a small caliber rigid meatus. In our series this "intraurethral" type is more prevalent than the external type and can easily be overlooked unless the following technic is used routinely. Insert in the meatus a small cotton swab saturated with a 10 per cent cocaine solution and allow it to remain five minutes. Then by gentle traction on the swab the intraurethral caruncle, if present, can be pulled forward to the external orifice and its size, shape and location in the meatus can be noted. In several instances the contracted meatus necessitated dilation before the growth could be demonstrated on the inner surface of the urethral mucosa immediately behind the dilated orifice.

If a caruncle of either type is discovered, regardless of its size or location, we rarely attempt further examination at this time unless we are dealing with an extremely cooperative patient. Hospitalization with proper environment is advised. We administer a light anesthetic, frequently low spinal, so that a more satisfactory study of this tumor can be made. It is to be borne in mind that a urethral caruncle is a potential obstruction at the urinary outlet with the possible sequence of edema, stasis, infection of the urine and back pressure. With these sequelae as a possibility it is advisable that before any type of treatment is applied to the caruncle the patient should have the benefit of a complete study, not only of the urethra and bladder, but in most cases of the upper urinary tract as well.

RESULTS OF EXAMINATION

In our reported series of 202 cases of urethral caruncle the following findings in the urinary tract were noted:

Urethral strictures were present in 8 cases. The strictures were located immediately adjacent to the caruncles, and all these patients gave histories of previous applications of cauterizing solutions.

Urethritis was present in 81 cases which showed varying degrees of easily recognizable urethral inflammation.

In 54 cases of cysts at the vesical orifice cystic degeneration of the mucosa of the vesical orifice was easily demonstrated.

In 111 cases the bladder urine showed infection, both acute and chronic.

In 20 cases the bladder was contracted to a capacity of less than 6 ounces (178 cc).

In 2 cases interstitial cystitis was found and in 2 cases bilateral pyelonephritis.

As a result of the frequency with which involvement of the urinary tract above the caruncle was demonstrated in this series we conclude not only that urethral caruncles should be regarded as an important etiologic factor in the production of bladder symptoms but that in many cases they act as true obstructions to the urinary outflow and produce the complications of urinary obstruction.

In the routine of eliminating caruncles or other disease at the meatal orifice we have also noted abnormal changes of the labia and surrounding structures including the anal orifice. There were 3 patients with uncontrolled, advanced diabetes who showed edema and excoriations of the external labia. Although much valuable information can be obtained by a thorough inspection of the perineum in the multipara, the examination should include palpation of the rectovaginal partition with the gloved finger of one hand in the rectum and the examining finger of the other hand in the vagina. Frequently one can demonstrate perineal relaxations that visually have not been evident.

There were 5 cases in this series in which the bladder symptoms were the result of a partial procidentia caused by a relaxed perineum.

By separating the labia one can easily observe changes in the character of the mucous membrane of the lower vaginal wall, at the same time the presence or absence of any abnormal vaginal discharge can be detected. If such discharge is present microscopic examination is, of course, indicated. There were 5 cases in this series in which *Trichomonas vaginalis* was demonstrated and was the only causative factor in the production of bladder symptoms.

Pathologic change in and around the rectum should also be noted as it may be the sole cause of the production of bladder symptoms. Hemorrhoids have been commonly noted in our findings but in most cases have been disregarded, for we believe that they are usually the result of urinary straining and not the cause of urinary symptoms. There were 2 young women who came to us with very troublesome bladder symptoms in whom our examination was entirely negative except for the presence of hemorrhoids. Both of these obtained complete relief following appropriate treatment of the hemorrhoids.

External examination should be completed by a thorough and complete bimanual pelvic examination, and it is this portion of the examination which we believe to be of extreme importance. If not thoroughly satisfied with our findings we always request the assistance and advice of a gynecologist. This examination must determine the relative importance of relaxations of the anterior vaginal wall (cystocele) and demonstrable abnormalities of the pelvic organs, either in size or in position, for the only manifestation of many of these conditions may be in the bladder symptoms they reflexly produce.

It is a fact acceptable to most urologists that the female urethra harbors numerous organisms, the so called *fossa navicularis* being the chief offender. In view of that fact, one may be subjected to adverse criticism for passing a catheter through an infected urethra in order that a specimen of bladder urine may be obtained. We are certain that, if this procedure is carried out aseptically and without trauma and is preceded by proper cleansing of the external genitalia no unfortunate results will follow. While all urologists recognize the extreme importance of having a catheterized specimen of urine for microscopic examination, its importance is seldom recognized by other members of the profession. In this series all patients were catheterized during our routine examination. We use graduated steel female catheters with aseptic technic and our records show that we have no cause for regret in a single case.

Regarding this matter of acute inflammation, suppose we have a patient with a symptomatic bladder, pus, blood and organisms in the urine, and from those findings realize that we are dealing with an acute inflammation of the bladder of unknown cause. We are now faced with the question: Shall the investigation be continued with further instrumentation in this acutely inflamed bladder, or shall it be given temporary rest with internal medication, forced fluids, sedatives and so on?

TREATMENT

Bearing in mind surgical principles in treating inflammatory lesions in other organs of the body, our experience has been to let such a bladder alone temporarily unless an emergency condition demands further investigation. The patient's bladder is symptomatically ill, and she should be placed in a hospital, where she can be under supervision. Should circumstances not permit hospitalization, she is told that she has an inflammation of the bladder and we do not think it advisable to proceed further at this time.

Rest in bed is advised, at least 8 or 10 glasses of water in the twenty-four hour period, a soft diet, with special instructions to eliminate all fruit juices. The patient is given twenty-eight tablets of $7\frac{1}{2}$ grain (0.5 Gm.) sulfathiazole and instructed to take one tablet after meals and at bedtime. In prescribing this drug we tell her that it can be used for only a limited time and is not a cure but will probably relieve her acute symptoms. She is instructed to return at the end of one week. The majority of patients after following this plan of procedure return sufficiently improved to justify us in continuing the bladder investigation. For patients showing little or no improvement we immediately demand hospitalization.

Visualization of the interior of the bladder by cystoscopy was done in each of the 152 cases. Frequently a combination of two or more etiologic factors was found in the same case, such as pelvic abnormality and urethral cysts, or intramural cystitis. In the statistical portion of our report each condition will be discussed separately, and consequently some of these cases will appear in more than one group.

One of the common causes of bladder symptoms encountered in this series was cystic degeneration of the mucosa of the vesical orifice. This condition was noted in 70 cases. For the sake of simplicity and for want of a more appropriate term we will refer to this condition as "cysts." These cysts can be described as appearing in a variety of forms and may be classified as single or multiple, bullous or pedunculated. In several cases the two types were observed in the same individual.

The bullous type was encountered in 26 cases and appeared as superficial, rounded elevations beneath a thin urethral mucosa, which was more or less distorted by associated edema and congestion and resulted in the formation of folds of mucous membrane with intervening clefts. It is interesting to note that in 16 of these cases not only was the urine negative for infection but there was no residual urine. In the remaining 10 cases varying amounts of residual urine were found. The cystoscopic findings in the 44 cases in which the pedunculated type predominated presented an entirely different picture. In several patients the cysts were located inside the vesical orifice adjacent to the trigone and in others they were found in the urethra just outside the sphincter. Such cysts may be either single or multiple and appear to have a short pedicle and a uniform circumference and terminate in the form of a rounded knob protruding into the vesical orifice. They are covered with a very thin, colorless mucous membrane, and small vessels can be visualized coursing through their entire length from the mucosa to the apex. In none of the cases of the pedunculated type was there found to be residual urine.

Urinary symptoms varied in different individuals, though frequency was recorded in all, and in most cases, particularly those in which there was no residual urine frequency was aggravated while the patient was on her feet. In the cases with varying amounts of residual urine there were the additional symptoms of burning, straining and occasionally hematuria. Three of the cases of the bullous type gave a history of urinary retention.

A personal experience during our examination of 1 of our earlier cases in this series is worthy of mention as it clearly proves the necessity of a thorough and complete examination in all cases of this type. The urinary history was suggestive of some type of bladder disturbance, but a catheterized specimen of urine was found to be negative chemically and microscopically. Following a careful examination, including a very satisfactory visualization of the bladder, trigone and vesical orifice, no evidence of abnormalities was discovered. As the patient was very cooperative we introduced a urethroscope to the sphincteric margin and limited the inflow of fluid in order to visualize the vesical orifice before distention. Much to our surprise several pedunculated cysts were washed through the sphincter.

and were easily identified. We heartily recommend this procedure.

The cause of cysts at the vesical orifice has never been definitely proved. It may be purely coincidence, but a review of the 70 cases disclosed that there had been previous pelvic surgery in 48, and sufficient pathologic change was discovered in the remaining 22 cases to cause us to believe that any condition that will produce an alteration of the normal blood stream supplying the vesical orifice should be given consideration as an etiologic factor in the production of cystic degeneration of the mucosa of the vesical orifice.

In our early experience selected patients with these lesions were treated in the office. However, our most satisfactory and permanent results have been obtained when the patient was hospitalized. With light anesthesia, preferably low spinal, the lesions are treated by direct application under vision with the high frequency spark, it being necessary not only to cauterize the base of the protruding cyst, but to cauterize gently all of the mucosa of the vesical orifice. We believe that this additional procedure not only will frequently prevent recurrences but will destroy certain cysts that are still submucoid in type and are not sufficiently far advanced to be visible during cystoscopy. It, of course, is advisable to refer the patient to a gynecologist for correction of any pelvic abnormalities. In our introductory remarks we suggested that the successful urologist is one who not only is qualified to practice his own rather limited specialty but is one who should be thoroughly familiar with the basic principles practiced in other related fields of medicine. We are prompted to emphasize these remarks after reviewing the findings in a series of 72 cases in which pelvic disease was demonstrated, for most of the complaints so definitely directed our attention to the bladder that the possibility of fibroids and ovarian cysts being present was entirely overlooked. We cannot emphasize that fact too strongly.

It is far from our thoughts to trespass on the field of gynecology, but as urologists we must be prepared to make a satisfactory pelvic examination and as urologic teachers we should impress on our students the necessity of making such an examination in the cases of the type included in this series.

Each of these 72 patients complained of frequency of urination, especially severe during the day, following exertion and usually relieved by reclining. Burning and pain were also present in 50 of the cases. There was considerable difficulty in urination in 10 cases and retention in 6. When the bladder was distended in 35 cases it was noted that the normal contour was altered by filling defects, many of which were demonstrated with cystograms. Cystoscopy was accomplished in 3 cases with great difficulty and was not particularly satisfactory because of distortion of the urethra and bladder as the result of small impacted fibroids in the anterior surface of the uterine wall. Cysts of the bullous type were encountered at the vesical orifice in 10 cases and the normal contour of the trigone was definitely altered, both elevated and distorted, in 12 cases.

In several cases there was definite prominence of the veins of the bladder mucosa immediately inside the vesical orifice. These at times were so prominent as

to be true varicosities. All of this series of 72 patients were referred to gynecologists, who corrected the pelvic disease.

POSTOPERATIVE OBSERVATIONS

With the cooperation of the gynecologist we were fortunate in having the privilege of following many of these patients postoperatively, for many of them required rather careful postoperative care of the bladder.

All surgeons have their individual methods of handling postoperative bladder retention, and for many years we followed the custom of catheterization as indicated. Many patients developed bladder infections so we altered that technic and now use the following procedure. The bladder is not disturbed after the operation until the patient complains of discomfort with an inability to void. In the meantime we use the hospital routine of all psychologic procedures, and if results are not obtained by these methods the patients are catheterized by an experienced nurse and the bladder is irrigated at the time with a weak solution of silver nitrate. Many patients become mentally perturbed because of this urinary complication, but they are assured that it is a common occurrence after surgery. After the initial catheterization we wait a reasonable length of time and if the patient is unable to void we introduce a number 18 French wing-tipped, self-retaining catheter, permitting the urine to drain continuously in a sterile receptacle. The bladders are irrigated at least three times daily with 2 ounces (60 cc) of sulfanilamide solution, sulfonamide drugs are given by mouth or intravenously as indicated. The catheter is removed on the third or fourth postoperative day. By this method we have obtained very satisfactory results.

We have been fortunate in being able to reexamine 10 of the aforementioned 12 patients within a year after surgery. The cystoscopic findings of all 10 showed that the trigone had returned to its normal condition, the varicosities had been obliterated in 8, but in 2 cases their appearance remained unchanged, though with improvement in bladder symptoms. From the 10 cases of recorded cysts the cystoscopic picture was unchanged, though the urinary symptoms were improved. Eight of these patients were later treated with very satisfactory urinary results. The 2 remaining patients refused treatment on the ground that the urinary results were satisfactory.

Pathologic examination in this series revealed 17 fibroids, 7 complete and 5 partial procidentias, 20 malpositions of the uterus, 3 unilateral ovarian cysts, 2 hypertrophied cervixes, 1 bilateral pyosalpinx, 2 calcifications of the uterus and 15 cystoceles with associated lesions.

The immediate postoperative results in the series were gratifying. Some of the patients returned in later years with what they thought was a recurrence of their original trouble, but examination proved the lesion to be inflammatory with an occasional bladder contracture. They obtained relief by routine office treatment, including bladder dilation.

COMMENT

In briefly commenting on this series, we feel that we can safely state that if any organ or organs in the female pelvis become deranged, either functionally

or pathologically, interfering with the normal bladder function, the bladder will signify this interference with a symptomatic response such as frequency, straining, burning or retention of urine.

In reviewing 23 cases of Hunter ulcers or interstitial cystitis as a primary cause of bladder symptoms we found that in all cases there was a history of chronicity with alternating periods of severe and mild symptoms with the fear that a cancer was present.

The cause is unknown but we have long been impressed with one factor namely that the urine of these patients practically always has a high pH. Possibly rather than a local condition of the bladder mucosa this pathologic change may be a local manifestation of some general metabolic irregularity.

In this series the symptom of frequency predominated and in most cases was associated with burning and suprapubic pain, but immediate relief of all symptoms was obtained after urination. We recorded clear urines in 18 cases, pus and organisms in 5.

On cystoscopy, all these bladders had reduced capacities. The bladder mucosae showed a very mild congestion with either single or multiple areas of intense inflammatory reaction, and these areas were not confined to any special location and seldom to true, destructive ulceration. Overdistention of the bladder (irrespective of the capacity) is almost always followed by hematuria. All these cases were recorded in our early experience, and we followed treatment outlined at that time with only temporary results. In later cases not recorded in the series our best symptomatic results have been obtained with the use of solutions of silver nitrate in increasing strengths, depending on the patient's tolerance, and with gradual dilation of the bladder by the gravity method. We also give these patients large doses of acidifiers, as we believe that it is more than a coincidence that they respond to therapy much better when we are able to keep the urinary pH at a point lower than 6.

These patients must fully appreciate that while intramural cystitis is an extremely troublesome condition it does not place their lives in jeopardy. They must also thoroughly understand that the treatment is entirely symptomatic and that the severity of the symptoms may vary from time to time.

We have a group of 8 cases in another series in which the specific irritating effect of certain chemicals on the vesical neck has been amply demonstrated. This irritation is manifested by the bladder with the symptom of frequency of urination. Frequently the offending agent is one of the volatile oils, the port of entry being either by the lungs or by the gastrointestinal tract.

Several years ago we were confronted with a diagnostic problem by a woman whose only complaint was frequency of urination of several weeks' duration. As she described the symptom, it was more noted during the day. She presented ample medical evidence that eliminated all objective pathologic change. In summary our detailed urologic findings were entirely negative and the urine was clear. In the meantime one of us discovered that she was an excessive cigaret smoker. In a joking way it was suggested that she change brands, which she did, and all urinary symptoms disappeared within forty-eight hours.

The remaining 7 patients all gave histories of excessive cigaret smoking with symptoms of frequency of two weeks' to three months' duration, negative physical and urologic findings with clear urines, and all relieved within sixty-four hours of changing brands of cigarets.

The eighth patient gave a history of acute bronchitis of four days' duration with sudden onset of frequency day and night—negative urologic findings with clear urine. Examination of a prescription she was taking noted "menthol" as an ingredient. Bearing in mind our experience with the aforementioned 7 cases we suggested changing the prescription and eliminating the menthol. Urinary relief was obtained within twenty-four hours.

One patient with complaints similar to those in the foregoing series had symptoms of frequency which were noted at night and gave a history of taking large doses of barbiturates. With a finding of clear urine it was suggested that she eliminate or change the drug and no detailed examination was made. The patient reported one week later that her symptoms had disappeared.

Another group similar to the foregoing is one in which the subjective symptom is accompanied by an excessive excretion of phosphates or phosphaturia following ingestion of alkalis or citrus fruit juice. Sixteen cases are recorded in this series, all with the same history of frequency of urination day and night, with an average duration of symptoms of two weeks and average weight 165 pounds (75 Kg). The first patient to report demanded hospitalization for a complete physical and urologic examination. The physical findings were unimportant relative to her symptoms and the first urine examination was negative clinically and microscopically. Detailed urologic examination elicited negative findings. We reviewed her history and she admitted that she had been treating with "a fly by night quack," a specialist in dietetics who guaranteed loss of poundage by limiting her diet to an intake of 4 quarts of orange juice daily in addition to his "secret medical formula." Regulation of her diet immediately relieved her symptoms. It is needless to add she was the urologic "guinea pig" for the remaining patients who reported later with the same story and also a factor to add to our urologic oddities that can be classed as primary bladder symptom producers with the finding of negative urine.

CONCLUSIONS

As in other fields of medicine pronounced pathologic disturbances in the bladder are often easy to recognize. It is the milder and less obvious conditions which tax the ingenuity and resourcefulness of the doctor. Many times although the pathologic alteration is not great the functional derangement may be most severe and distressing to the patient. Dysuria often falls into this category, and the cause of the disturbance can be found only by a sympathetic approach to the patient's problem by attention to detail in the matter of careful and complete history taking and examination and by the use of methods of treatment which have proved their value.

Our experiences in this field demonstrate how varied the causes of dysuria may be and how they can be discovered only by careful study and examination.

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PROSTATITIS AND SEMINAL VESICULITIS ACUTE AND CHRONIC

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Infection of the prostate and seminal vesicles may present a clinical picture varying from that of an acutely ill patient to that of one who is unaware of a smoldering infection. The symptoms and diagnosis of an acute infection of the prostate present little difficulty, but the insidious onset and absence of symptoms pointing to the urinary tract in many chronic infections may fail to attract the patient's or physician's attention to the prostate as the source of infection. Although usually not dangerous to life, chronic prostatic infections may cause suffering and inconvenience out of all proportion to the actual extent of the disease.

Chronic prostatic infections occur with greater frequency than is generally believed. Hinman¹ states that 35 per cent of all adult males have infected prostates. They occur more frequently in middle life—that is, between the ages of 30 and 50. The manifestations may be so capricious, with no symptoms referable to the prostate, that it becomes a matter of chance during routine examination to discover the prostate as the source of infection. A cardinal principle of surgery is violated in treating these patients by massaging an infected area, yet much clinical evidence has accumulated to justify such treatment, since most patients may thus be relieved of their infection.

ETIOLOGY

Acute prostatitis and seminal vesiculitis usually develop from an active infection in the posterior urethra. This infection may arise from an acute urethritis, may be secondary to an infection of the upper urinary tract with infected urine, may be metastatic or may result from a general pyemia. The offending organism may be the gonococcus, but any other pyogenic bacteria can produce an acute prostatic infection. An abscess may develop or the process may subside, giving place to an ordinary chronic infection.

Chronic prostatic infections, in most instances, are not caused by the gonococcus. Kretschmer,² in a study of 1,000 cases of chronic prostatitis, identified the gonococcus as the offending organism in only 24. Gram-positive cocci are frequently mistaken for gonococci both in urethral and in prostatic smears and a diagnosis of gonorrhea is erroneously made. Gonococci should be searched for with extreme care before the diagnosis of gonorrhea is made. It is unfortunate that patients as well as many practitioners are of the opinion that chronic prostatitis is preponderantly due to or the result of, gonorrheal urethritis. This point of view is regrettable since it does an injustice to many patients suffering from chronic prostatitis.

Undoubtedly a certain percentage of cases of chronic prostatic infection result from gonorrhea, even though the gonococcus cannot be demonstrated in the prostatic secretion. Other bacteria are found in the strippings from the prostate, and the role of preexisting gonorrhea

must remain uncertain. A large percentage of these patients give no history of gonorrhea, and the origin of the infection must be sought for elsewhere. Kretschmer,² in a study of the cultures from 407 patients with chronic prostatic infection, found colon bacilli and staphylococci to be the most frequent organisms. This corresponds with the findings of Hill⁴ and many other observers. Frequently more than one type of organism is found in the prostatic secretion. In a series of 170 cultures 60 contained two or more organisms, while 22 failed to reveal any bacteria.

In a certain number of cases, chronic prostatitis is the result, or aftermath, of an attack of acute prostatitis. As the acute infection subsides, the prostate remains infected and requires treatment to eradicate the infection completely. Even after an abscess has run its course by absorption or rupture or has been relieved by operation, a certain amount of infection of the prostate usually remains, as may be demonstrated by a careful examination of the strippings.

The prostate may become infected from direct extension of an acute urethritis, the bacteria entering the gland by way of the prostatic ducts. This is the usual method of involvement of the prostate from gonorrhea or from a nonspecific urethritis.

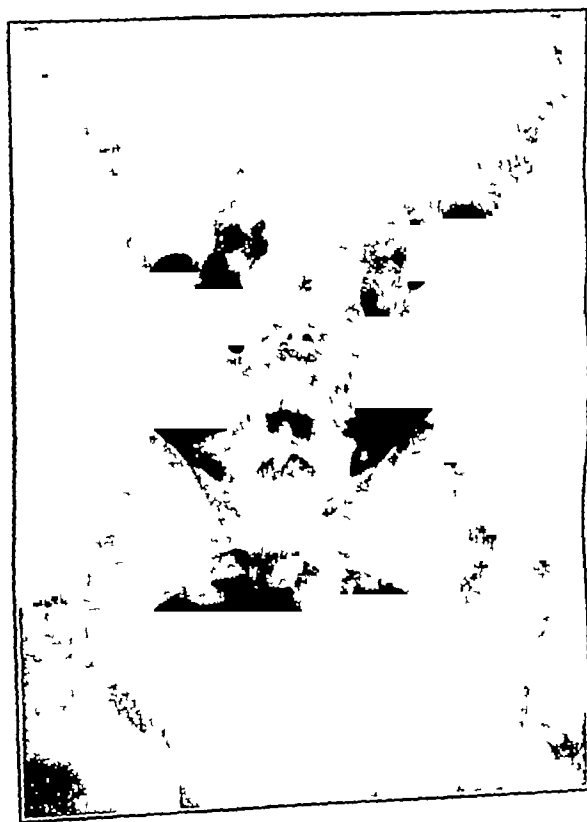


Fig 1—Pycelogram showing moderate hydronephrosis and pycelonephritis discovered in a patient presenting symptoms of chronic prostatitis.

Distant Foci of Infection—It is a well recognized clinical fact not only that chronic prostatitis may be the focus of infection which produces metastatic disease in remote parts of the body but that the prostate may itself be infected from foci in other parts of the body. It is accepted by most urologists that the prostate may become infected from the teeth, tonsils, intestinal tract, respiratory tract, furuncles and other sources. The method by which these bacteria reach the prostate has not been proved. Many urologists believe that

This paper, in a symposium on "Office Treatment in Urology," is published under the auspices of the Section on Urology. Philadelphia, Frank W. B. Saunders Company, 1936.
1. Hinman, Frank. The Principles and Practice of Urology. Philadelphia, W. B. Saunders Company, 1936.
2. Kretschmer, H. J., Berkey, H. A., Heckel, N. J., and Ockuly, J. A. Chronic Prostatitis. A Critical Review of 1,000 Cases, Illinois J. 71: 157-161 (Feb) 1937.

3. Kretschmer, H. L. Medical Management of Chronic Prostatitis. Wisconsin M. J. 38: 363 (May) 1939.
4. Young, H. H. and Davis, D. C. Practice of Urology, Philadelphia, W. B. Saunders Company, 1936, vol. 1, p. 162.

the organisms enter the blood stream and are carried to the prostate directly. Others visualize these absorbed bacteria from various foci entering the blood stream, to be excreted from the kidney, then, during their passage from the kidney through the bladder some bacteria



Fig 2—Pyelogram of same patient as in figure 1 after treatment with urinary antiseptics and dilation of the ureter

lodge in the prostatic ducts eventually to produce a prostatic infection. There is some evidence to substantiate this theory. It has been shown that pyogenic bacteria may be excreted by the kidney without producing pus or other evidence of infection in the urinary tract in the absence of obstruction. Tuberculosis frequently involves the kidney primarily, then invades the prostate, seminal vesicles and epididymides as the bacteria pass to the bladder in the urine and are voided. If tubercle bacilli follow this sequence, it is argued, why should not other bacteria do likewise? Hill⁴ has shown the frequency with which the same bacteria are found in the urine as are found in the prostatic secretion both by smear and by culture. This suggests that bacteria excreted through the kidneys may be the source of the organisms producing prostatic infections.

This mode of infection is further suggested by patients presenting symptoms of chronic prostatitis who actually have demonstrable infection in one or both kidneys. Usually the renal infection may be suspected by the finding of pus in the first, second and third glasses of voided urine. However, in some instances the second and third glasses of voided urine may be macroscopically clear and the presence of infection in these specimens may be overlooked. In other instances the infection may be absent in some specimens only to appear at a subsequent urine examination. Such a typical case was seen recently. A policeman presented symptoms of chronic prostatitis. His voided urine showed a few pus cells and shreds in the first specimen, but the second and third glasses were normal. On occasional subsequent visits each glass of voided urine showed pus cells. There were no symptoms

referred to his kidneys. After about six weeks of treatment by prostatic massage without complete relief a thorough urologic investigation was carried out. This revealed a moderate infection in his right kidney with some hydronephrosis. The same type of bacteria was cultured from both the kidney and the prostatic stripplings (fig 1). Adequate treatment directed to this kidney restored it to normal, as evidenced by a pyelogram (fig 2) and functional tests. With subsequent treatment of his prostate by massage the prostatic secretion became entirely free from infection. It is difficult to evaluate the sequence of events in this case. Whether the kidney infection antedated the prostatic infection or was secondary to it cannot be stated with certainty. However, one should be constantly aware of the possibility that some other focus in the urinary tract may be responsible for failure to obtain results in the treatment of a prostatic infection. Such a focus may constantly reinfect a prostate even during the course of its treatment.

A case of renal tuberculosis may be erroneously diagnosed and treated as a case of chronic prostatitis. Another recent patient had been thus treated, and only a thorough examination revealed the primary source of his infection to be in the kidney (fig 3). It is true that his prostate was infected, but this local infection was evidently secondary to the renal lesion.

These cases are cited to suggest the possibility of the urinary tract being the means by which bacteria may



Fig 3—Pyelogram revealing renal tuberculosis in a patient presenting symptoms of chronic prostatitis for which he had been treated

reach the prostate. Slight recurring attacks of pyelonephritis may go unrecognized or be passed off by the patient as a "cold in the bladder." Subsequent chronic prostatic infections may result from these renal lesions as the bacteria are voided in the urine and a few remain in the prostatic urethra to produce an inflammation.

Sexual Factors—Much has been written on the relationship of sexual abuses to chronic prostatitis. Horseback or bicycle riding, alcohol, sexual overindulgence, withdrawal, prolonged sexual excitement, masturbation and prolonging the sexual act have all been considered factors in the production of chronic prostatitis. Undoubtedly, each may be a predisposing factor by causing congestion of the prostate. However congestion alone will not produce an infected prostate, bacteria must invade the gland in some manner. Such sexual irregularities may logically be considered to produce a fertile field for the growth of bacteria once they have invaded the prostate. The path of the invading organism is uncertain, but the frequent contact of this congested gland with voided urine may result in the deposition of pathogenic organisms and the production of a prostatic infection.

PATHOLOGY

"Acute prostatitis begins as an acute inflammation of the prostatic ducts and acini and of the overlying posterior urethral mucosa." The seminal vesicles usually also become involved. The infection may subside, or it may invade the stroma around the acini, coalesce and form a prostatic abscess.

Chronic prostatitis presents a similar involvement of the prostatic ducts and acini but is less acute in its onset and runs a more protracted course. The virulence of the invading organism is not so pronounced, and the prostatic ducts are less likely to be occluded early in the infection. The stroma may be invaded and, if uninterrupted by treatment this invasion may finally progress to the formation of prostatic sclerosis. Hyams⁶ failed to find inflammation of the seminal vesicles without similar involvement of the prostate, yet prostatic infection does occur without either seminal vesicle being affected. It therefore must be uncommon for the seminal vesicle to be the focus of an infection in the absence of prostatic disease.

SYMPTOMS

Acute prostatitis is ushered in by severe urinary distress. The voided urine is cloudy from pus, since an accompanying urethritis and cystitis are usually present. Urethral discharge may be profuse or absent, depending on the drainage from the prostatic ducts. Pain, fever, chills and frequent, difficult urination are present in varying degrees. Complete urinary retention may occur and when it does, is suggestive of the formation of an abscess.

The symptoms of chronic prostatitis and seminal vesiculitis may not so readily attract attention to the affected area. In many instances, attention is directed to the prostate by the history and urinary symptoms, on the other hand, the absence of urinary symptoms and findings may fail to suggest a prostatic infection. In general, the subjective symptoms may be divided into three groups: (1) predominantly urinary symptoms, (2) symptoms, resulting from chronic prostatic infection, referable not to the prostate or urinary tract but to distant parts of the body and (3) some form of sexual dysfunction.

Patients with predominantly urinary symptoms (group 1) comprise the largest number. The symptoms immediately attract attention to the urinary tract

as the source of the infection. A mild urethral discharge may be the only presenting symptom of chronic prostatitis, and these patients are fearful that they have contracted gonorrhea. The urethral discharge is frequently caused by an infected prostate or seminal vesicle spilling some of its organisms into the urethra, to produce a urethritis. A careful microscopic examination of such a urethral discharge is imperative before one is justified in making a diagnosis of gonorrhea. The character of this discharge is extremely variable, but the discharge is usually less in quantity and more "sticky" or thinner than that present in gonorrheal urethritis. Such a discharge is found in almost 40 per cent of cases. Frequency of urination is often present and suggests the posterior urethritis so frequently encountered in prostatic infections. Any type of urinary symptoms may be present in chronic prostatitis, but none are pathognomonic of the disease. The intimate relationship of the prostate to the bladder neck would lead one to expect an infection of the gland to produce urinary symptoms. These may be quite severe, very mild or entirely absent. Pain of varying degree may also be present in the prostate. It is usually mild, although at times it is described as really severe. Pain caused by the prostate may be referred to the perineum, urethra, penis or rectum and may be aggravated by sitting on a hard chair. Relief may occasionally be obtained by crossing the knees or by making pressure on the perineum.

In group 2 are patients who may be classified as having a "silent prostate," since no symptoms are referable to the urinary tract or the prostate, yet the prostate and seminal vesicles may be the foci of infection for some distant lesion. Among the common lesions for which the prostatic infection may be responsible are arthritis, bursitis, myositis, neuritis and iritis. When seeking for foci of infection, the prostate and seminal vesicles should be considered as routinely as the teeth, tonsils or sinuses. Early recognition of such a focus before irreparable damage has been done is important. Pain from prostatic infection is usually referred to the lower lumbar region or perineum but may occur any place in the pelvic region or down the legs. These vague symptoms are so common that one should routinely examine the prostate as a possible source of infection in patients manifesting them.

These indefinite pains may be so slight that the patient may be unaware that he is not quite normal. He may attribute them to "rheumatism" or a "strain," and it is astonishing how long these discomforts will be endured before the patient seeks advice as to the real cause of his trouble. The effect on the nervous system may become quite definite and true neuroses may make their appearance. The patient becomes restless, complains of lack of concentration and may feel that he is becoming prematurely senile. His anxiety as to the future and the constant feeling of ill health may provoke other varied symptoms. Gastrointestinal manifestations may appear, and "dyspepsia" or flatulence may be prominent. Unfortunately, in many of these cases there is nothing either in the history or in the symptoms to suggest a chronic prostatic infection as the cause of the disturbances.

Symptoms of sexual dysfunction (group 3) are fairly common, but in view of the fact that the prostate is a sexual gland, and considering the prevalence of prostatic infections, it is remarkable that sexual symptoms

⁵ Keyes, F. I. *Urology*, New York: D. Appleton & Co., 1928.
⁶ Hyams, J. A., Kramer, S. E., and McCarthy, J. F. *The Seminal Vesicles and the Ejaculatory Ducts*, J. A. M. A. **98**: 691-696 (Feb. 27) 1932.

are not more frequent and severe than they are. Undoubtedly some sexual disorders are caused or aggravated by chronic prostatitis since treatment of the prostate occasionally results in considerable benefit of the sexual symptoms. However, so many factors are involved in most sexual dysfunctions that it is difficult to evaluate the primary cause. Certainly one should investigate the prostate carefully and attempt to rid it of any infection. According to Kretschmer⁷ premature ejaculations, loss of desire and weak erections are most commonly complained of by patients manifesting chronic prostatic infections.

DIAGNOSIS

In acute prostatitis and seminal vesiculitis any manipulation by rectum must be gentle, and massage and stripping are contraindicated. The history usually gives presumptive evidence of an acute infection and urinary symptoms are referable to the seminal tract. Acute febrile reactions depend on the severity of the attack. The urine, even when voided in three glasses, is usually cloudy from pus. Careful rectal palpation will reveal a swollen, hot, tense prostate. Instrumentation should be avoided until the acute symptoms have subsided, but repeated gentle palpation of the prostate may be necessary for the diagnosis of prostatic abscess.

The diagnosis of chronic prostatitis is based on the findings of rectal examination and the microscopic examination of expressed prostatic fluid. The voided urine frequently contains shreds and occasionally some pus, although it may be entirely normal. The history may not give any evidence of a prostatic infection and careful rectal palpation with repeated massages may be necessary to obtain pus in the prostatic fluid. The first gentle prostatic massage may express the fluid from those ducts which are uninfected and the strippings may appear normal under the microscope. The infected ducts may be temporarily occluded by pus and debris, and two or three or even four examinations at three to five day intervals, may be required to obtain strippings from all the prostatic ducts. Thus one may be uncertain of the presence of pus in the prostatic fluid obtained from a single examination. Although some urologists do not agree, Hinman¹ states that "the trauma of three repeated prostatic examinations (on alternate days) will not in itself cause the appearance of pus in the secretion if infection is absent at the start." These repeated examinations may stir up a latent or hidden focus which might otherwise be missed.

Many different positions for the patient to assume for palpation or massage of the prostate have been recommended. I myself prefer to have the patient kneel on a table, with the buttocks extended and the head down to a level with the knees. With the patient in this position the physician may palpate the prostate and seminal vesicles more completely, with less pain to the patient. The gloved finger, well lubricated, should be inserted very slowly past the rectal sphincter. When this careful procedure is followed, the patient will be less likely to draw away from the examiner, and he will be extremely grateful for one's gentleness. The shock of suddenly dilating the rectal sphincter may be much greater than that of massaging the prostate.

Often there is a decided discrepancy between the gross palpable changes in the prostate and the degree of infection manifested in the strippings. The examining finger may detect no gross change in the size or consistency of the prostate, yet it may be infected.

More frequently the prostate is one or more of the following: enlarged, irregular in outline, nodular, boggy, indurated, with an occasional area of softness, and surrounded by adhesions from periprostatic inflammation. Normally the two lateral lobes, which are palpable by rectum, should be smooth on the surface, firm in consistency with a dividing median sulcus and freely movable from side to side. Each lobe should be about the size of the distal phalanx of the thumb.

The normal fluid expressed from the prostate is opalescent, slightly alkaline to litmus, filled with minute, translucent, lecithin bodies (somewhat smaller than red blood cells) and contains some epithelial cells, a few corpora amylacea, often spermatozoa and less than 10 leukocytes per high power field. One should not be misled in obtaining a normal secretion on first examination, particularly if rectal palpation gives evidence of an abnormal prostate.

The diagnosis of chronic prostatitis is established with the finding of an increased number of leukocytes in the prostatic strippings, particularly if they are seen in clumps. It is usual for the quantity of lecithin bodies to be decreased in the presence of many pus cells and, as improvement occurs, the leukocytes decrease in number and the lecithin bodies increase. Brunet and his associates⁷ suggest the use of the peroxidase stain for prostatic secretions. This stain readily differentiates granular cells and lymphocytes from polymorphonuclear leukocytes. Trattner⁸ has recently devised a "partition catheter" for the purpose of temporarily excluding the prostatic urethra from the distal urethra and the bladder. Between these two inflated bulbs are openings in the catheter which may be injected with a contrast medium to visualize the prostatic ducts by x-ray, or antiseptic solutions may be forcibly injected through them into the deep recesses in the prostate. He urges extreme care in the use of this catheter, since these solutions may be forced into the blood stream or into the ejaculatory ducts to produce epididymitis.

It should again be stressed that the prostate deserves to be considered a possible focus of infection just as much as the teeth or tonsils. The prostate is more likely to be overlooked when urinary symptoms are not present and the voided urine is normal. Every physician is aware that the small, buried tonsil is as dangerous a focus of infection as the huge tonsil with infected follicles. The prostate too may be harboring an infection which may be absorbed by the blood stream, and yet none of the infected material escapes through the prostatic ducts to produce urinary symptoms and give evidence of infection in the voided urine. Every practitioner should make proper examination of the prostate a routine procedure when searching for a focus of infection.

COMPLICATIONS

The mere finding of an abnormal prostate, by rectal palpation and pus in the strippings from it, should not conclude an investigation. Although the diagnosis of chronic prostatitis is thus established, one should seek the cause of the infection and attempt to eliminate factors which may prevent its ready response to treatment. Response to local treatment should not be expected,

7 Brunet W. M. Shaw N. D. Reinhardt C. H. and Anday L. J. Chronic Prostatitis. A Clinical Review of 100 Cases in Which the Fresh and Peroxidase Stained Secretions Were Studied. *Virginia M. Monthly* 60: 619-625 (Nov.) 1942.

8 Trattner H. R. The Introduction of Solution into the Tubulo-alveolar System of the Prostate Gland. *J. Urol.* 48: 710 (Dec.) 1942.

when the prostate is being constantly reinfected from an infected tooth or tonsil, unless the source of the infection is first eliminated. Neither will a prostate respond to local treatment when a posterior urethritis, urethral stricture, cystitis or renal infection is present without adequate treatment of the complicating condition.

In the presence of an acute or a subacute infection of the prostate it is unwise to examine the remainder of the urinary tract. Even in the presence of chronic prostatitis it frequently is better to treat this infection for a reasonable time before resorting to a more thorough study of the urinary tract. However, one should not persist with local treatment when satisfactory response is not obtained without seeking for some coexisting complication. In fact, such complications are so common that many urologists prefer to consider chronic prostatitis as a symptom or a secondary infection from some focus the finding and elimination of which is essential to adequate and permanent relief. To discover the origin of such a primary infection often requires diligent and persistent search, but the problem should constantly be before one while treating chronic prostatic infections.

Besides the teeth and tonsils, the intestinal tract, gall-bladder, cutaneous infections or perirectal infections may be the source of an infected prostate. Within the urinary tract almost any infective process may produce a prostatic infection and prevent the response of the latter to treatment. Among the more common causes are urethral strictures (often of large caliber), lesions of the urethra, chronic urethritis, urinary retention from hyperplasia or a fibrous bladder neck, vesical diverticula, prostatic calculi, chronic renal infections, tuberculosis, diabetes and syphilis. Careful observation of the voided urine should be made on each visit, preferably in two or three glasses. Evidence of infection in the second and third glass is suggestive of an infection of the upper urinary tract, yet such evidence may not be obtained at all times, as is the case when an intermittent pyelonephritis is present. A test for residual urine should be made from time to time. In short, when symptoms of chronic prostatitis are not relieved and the strippings do not show definite improvement within six weeks after a biweekly course of prostatic massage has been instituted, one should carefully search the urinary tract for a reason why the response has not been satisfactory. To persist with massage for prolonged periods is rarely necessary and suggests that a focus of infection may have been overlooked.

Failure to establish normal sexual hygiene may interfere with the improvement in chronic prostatic infections. On the other hand, the most careful and diligent search may fail to reveal the source of the infection in chronic prostatitis.

Before the diagnosis of chronic prostatitis can be properly established, it is necessary to rule out other lesions of the prostate. A tuberculous prostate usually presents an irregular nodular surface to palpation. It is almost always secondary to tuberculosis elsewhere in the urogenital tract, and careful search may reveal tubercle bacilli in the urine or, less frequently, in the prostatic strippings. Prostatic calculi may be suspected by palpating crepitation within the prostate and can be confirmed by x-ray examination. Advanced carcinoma of the prostate presents a stony hard induration. Early

carcinoma is also hard but may be limited to a small pea sized area readily palpated at rectal examination. These conditions should be ruled out, if possible, before treatment is undertaken. A hard nodule in the prostate may require surgical perineal exposure with biopsy to confirm the diagnosis.

TREATMENT

Acute Prostatitis—The treatment of acute prostatitis is by heat and protection from trauma and that of subacute and chronic prostatitis by prostatic massage. The sulfonamides are often helpful in either condition but cannot be relied on to the exclusion of local treatment.

Acute prostatitis, whatever the cause, is best treated by complete bed rest for all febrile cases and the avoidance of foods which irritate the urinary tract. Sexual excitation should be avoided and all local treatment, such as urethral or bladder irrigations and rectal manipulation, should be discontinued. Heat is beneficial and may be obtained by hot sitz baths, by the application of heat directly to the prostate, by rectal irrigations or by electric prostatic heaters or diathermy. The Bransford Lewis electric device has given satisfactory results. Herring⁹ advocates diathermy with proper orificial electrodes as the method which will obtain the greatest elevation of local temperature to the prostate. The bowels should be kept well open to avoid the pressure of a hard stool against the prostate. Only the most gentle palpation should be done to diagnose the development of a prostatic abscess. The sulfonamides are usually very effective in relieving acute prostatitis. Sulfathiazole, if tolerated, usually is most effective when given in 1 Gm. doses every four hours, together with sufficient alkalis, such as sodium bicarbonate. The urinary output should be measured and maintained at a minimum of 1,500 cc. daily. Sulfonamide medication should rarely be given for more than ten days, and blood studies should be made if prolonged treatment becomes necessary. Following the subsidence of acute symptoms, local treatment may be carefully instituted.

Chronic Prostatitis—The treatment of chronic prostatitis revolves around the principle of establishing adequate drainage of the infected prostatic ducts. In some instances this is readily accomplished, in others it is difficult to attain, while in cases presenting pronounced sclerotic changes the establishment of drainage of all the infected areas may be impossible with any type of local treatment.

Local Treatment—Once the diagnosis of chronic prostatitis has been established, massage of the prostate by the rectum is the most important single measure to be employed in its treatment. Although massage of an infected area may seem unphysiologic, urologists have achieved considerable success in the systematic treatment of these infections. This method of treatment is universally adopted by all urologists, yet some difference of opinion exists as to the frequency with which such massage should be carried out. As a rule we massage the prostate twice a week, and as the amount of pus diminishes the treatments are given less frequently.

The first object of prostatic massage is to increase the blood supply to the prostate and in this way aid in carrying away infection and stimulating absorption. The second purpose is to evacuate pus, bacteria and

⁹ Herring, J. B. Heat Producing Appliances. Their Comparative Value in the Treatment of Prostatic Infection, California & West. Med. 45: 140 (Aug.) 1936.

debris from the prostatic ducts. Too frequent or too vigorous massages may defeat these purposes and may even produce an acute infection in the prostate or epididymides.

Some urologists prefer to massage the seminal vesicles and prostate before the patient voids his urine after which the urine flushes the prostatic fluid from the urethra. Others instil an antiseptic solution into the bladder and posterior urethra after prostatic massage with the expectation that some of the solution may find its way into the emptied prostatic ducts. Still others instil an antiseptic solution into the bladder through a catheter before massaging the prostate, hoping thereby to prevent the expressed infected material from infecting the bladder or urethra. Although each method may have some advantage in certain instances voiding after massage is satisfactory in most cases.

Massage of both the seminal vesicles and the prostate should always be performed together. With the patient kneeling in the knee chest position the gloved index finger, well lubricated is gently and slowly inserted into the rectum as far as possible. Pressure is begun above the prostate on one side as the finger is withdrawn to the prostate. This is repeated several times and followed by the same procedure over the other vesicle. The finger is then brought down to the prostate and several strokes are made over the gland on either side from the uppermost part of the prostate downward and toward the midline. The massage is concluded by several strokes over the midline to express the fluid from the main ducts into the urethra. The prostatic fluid appears at the urethral meatus and is collected on a glass slide for examination. While gentleness is imperative during the first few massages more firm pressure may be required in those cases which fail to respond to treatment.

The next most important element in the local treatment of chronic prostatitis is the search for and treatment of urethral stricture. This is particularly necessary if symptoms of a chronic urethritis are present. The great frequency with which prostatitis is associated with urethral stricture should lead one to search for both lesions in every patient. Often the treatment of either the urethral stricture or the prostatic infection is continued without searching for its associated lesion. Urethral dilation is never undertaken in an acute urethritis, but in the presence of a few shreds and pus cells in the urine the passage of sounds is very beneficial. Even when a definite stricture cannot be found dilations will serve to promote better drainage from the prostatic ducts. It is preferable to pass but one sound at a single treatment and not repeat the procedure more than once a week. Too enthusiastic treatment may produce complications and retard the favorable progress of the disease. If care is used in the passage of urethral instruments, any subsequent increase in symptoms may be considered to result from the activating of a dormant infection in the urethra or prostate and not to be caused by the passage of a sterile instrument into the bladder. Increase in the urethral discharge may follow instrumentation of the urethra, or chills, fever and sweats may supervene from stirring up a smoldering infection in the genital tract.

The value of urethral dilations is commonly seen in chronic prostatic infections with symptoms of posterior urethritis. Recently a patient had been treated by

prostatic massage twice weekly for six weeks. His symptoms failed to subside and he was relieved only after the passage of sounds. Furthermore, his prostatic infection began to improve more promptly after his urethral dilations.

Many methods have been advocated for applying heat to chronic prostatic infections. When symptoms are severe, considerable relief may be obtained from local heat. An electric pad or hot water bottle applied to the perineum is helpful. Hot rectal douches are advocated by some but are rarely required in chronic infections of the prostate. Various prostatic heaters and electric devices have their advocates and are helpful in some cases. However, Herring⁹ has shown that most of these commonly used methods fail to produce heat in the prostate. Although symptoms are frequently improved by the application of local heat, the actual benefit to an infected prostate is problematic.

The use of strong solutions and astringents has fallen into disrepute. Vaccines have seldom, if ever, added anything of value to the treatment of these cases.

The treatment of chronic prostatitis by intraprostatic injections has been advocated by Grant¹⁰ in recent years. The prostate is injected with a needle inserted through the perineum and guided by a finger in the rectum. Various antiseptic and sclerosing solutions have been used with reported success. However, O'Connor¹¹ in an experimental study showed that any solution thus injected produced a sclerosis and left infected areas in the prostate with their normal drainage ducts occluded. This method of treatment also has few advocates.

The use of the sulfonamides has been helpful in eradicating the infection from the prostate in certain cases. When fibrosis is present within the prostate, any blood borne medication such as the sulfonamides, will likely prove to be of little if any benefit. It is my practice to give sulfathiazole (1 Gm four times daily for ten days) in these cases while prostatic massage is being carried out. If no benefit results in that time, it will rarely be helpful to continue the medication. I believe it is also desirable to administer one of the sulfonamides for twenty-four hours before and after urethral dilations. Whether this benefits the local infection is doubtful, but it should reduce the incidence of epididymitis. Actually, epididymitis from prostatic and urethral infections is becoming rare.

Other complications in the urinary tract, besides urethral stricture, may prevent one from obtaining a satisfactory response from local treatment to the prostate. A narrow meatus demands a meatotomy so that adequate urethral dilation may be carried out. Urethroscopic examination may reveal local infected crypts along the urethra which may cause urinary symptoms with shreds and pus in the urine. Polyps or granulation tissue are frequently found in the posterior urethra. Prostatic calculi may be present and unsuspected from rectal palpation and may require x-ray examination for their detection. Fibrosis, or even a prostatic bar, may interfere with adequate drainage from the prostatic ducts. A superimposed hyperplasia of the prostate may act in a similar manner. Tuberculosis, diabetes or syphilis may prevent a favorable response.

10. Grant Owsley. Treatment of Prostatitis by Injection. *J Urol* 29: 749-753 (June) 1933.
11. O'Connor A. J. and Ladd R. L. Intraprostatic Injections. *J A M A* 107: 1185-1188 (Oct. 10) 1936.

to local treatment. Finally, any infection in the kidneys, ureter or bladder may reinfect the prostate, so that local treatment will not suffice to cure the prostatic infection. While it is true that most of these infections are readily suspected from pus in the second or third glass of voided urine, the infection may be so mild as to escape the examiner's attention unless a careful microscopic study of each glass of voided urine is performed. Renal symptoms are frequently entirely lacking. Pyelonephritis may occur intermittently in such a mild form as to escape notice by the patient or physician yet enough bacteria may be excreted in the urine to reinfect the prostate. Such bacteria may even be excreted without the presence of pus in the urine, and stains or cultures of the urine are necessary for their detection. Their intermittent excretion may require careful study to evaluate their significance. When such doubt exists a complete urologic study is indicated.

The prostate may become infected from a distant focus of infection. Cabot¹² believes that 95 per cent of such cases are secondary to infections in the teeth and tonsils. Acute upper respiratory or intestinal infections may also produce a prostatic infection. If the original focus is discovered and removed, the prostatic infection will then become the primary focus of infection but if the prostatic infection is treated, without removing the original focus, the response to treatment will be slow and recurrences likely. In treating such cases, the elimination of the original focus followed by adequate treatment of the prostate, is indicated.

Severe local and distant reactions may occur following massage of a prostate which is the seat of a focal infective prostatitis. When following prostatic massage an exacerbation of symptoms occurs in a case of arthritis, iritis, neuritis and the like, it is suggestive evidence that the prostatic infection is responsible for the distant lesion. Very gentle massage should be carried out for the first few treatments, since vigorous treatment may occasion such a severe general and focal reaction that irreparable damage may result. These reactions are probably due to specific toxins forced into the blood of a patient already sensitive to them.

Chronic prostatitis is frequently present in patients presenting symptoms of sexual dysfunction. The role that this infection plays in the production of these symptoms is not thoroughly established. Certainly treatment of such infections is followed by improvement in symptoms in some cases while in others there fails to be any response. The complexity of symptoms and the multitude of causes for such disturbances call for a thorough study of the individual case and the institution of appropriate treatment. When a diseased prostate is discovered, it should be treated in order to eliminate at least one factor in the production of sexual symptoms. Glandular therapy, encouragement and psychotherapy are other forms of treatment which may be beneficial.

General Treatment—Patients with chronic prostatitis are usually urged to avoid highly seasoned foods, spices and strong alcoholic drinks, since these may irritate the urinary tract. I have not been convinced of the necessity for such restrictions except for moderation in alcoholic beverages. The patient should be urged to drink substantial amounts of fluids. The bowels should

move at least once a day to prevent congestion around the prostate from impacted fecal contents.

Advice concerning sexual relations should depend on the severity of the infection. It is often wise to avoid sexual excitement when symptoms are moderately acute, yet regular sexual habits should be urged when the symptoms have begun to respond to treatment. Irregular sexual practices and overindulgence should be avoided. Massage may take the place of sexual hygiene in the early stages of treatment but is at best a poor substitute for it. The quantity of prostatic fluid expressed by massage is much less than is contained in a normal ejaculate. Normal intercourse should aid in the treatment of nonspecific prostatitis and should be permitted while massage is being carried out.

The sulfonamides are helpful in the treatment of certain cases of chronic prostatitis but should not be used to the exclusion of local treatment. Prolonged use of these drugs will not aid in the treatment and may prevent a normal response from being obtained by massage. Recently a patient had been taking sulfonamides for two months and his symptoms and prostatic secretion were becoming progressively worse. His blood count showed 3,800,000 red blood cells and 3,700 white blood cells with 70 per cent lymphocytes. Discontinuance of the drug caused a prompt return of his blood count to normal and subsequent improvement in his infection.

PROGNOSIS

The response to treatment in chronic prostatitis and seminal vesiculitis may be slow and the patience of both the patient and the physician may be taxed to the utmost. Persistent massage may be required for long periods but should be spaced with vacations from treatment. The goal should be the elimination of pus from the prostatic strippings. In general the outlook in the treatment of these patients is good, provided the cooperation of the patient can be maintained. It is better to discuss the possibility of prolonged treatment with the patient at the outset so that discouragement may be avoided at a later period.

The prognosis in chronic prostatitis depends largely on the cause and the degree to which the infection has progressed. If the cause can be ascertained and corrected and the prostate is soft and boggy, the outlook should be good. If the origin of the infection is vague and the infection has progressed to the formation of considerable scar tissue in the prostate or to the development of a fibrous bar or prostatic calculi, conservative treatment will likely not eliminate the infection.

One should constantly seek the origin of the infection whether it is from an acute local infection or a distant focus, since elimination of such an area materially alters the prognosis. In many instances this is difficult to ascertain and study of the patient may be required for some time to arrive at a conclusion. In some cases careful, diligent search for the cause may be unavailing. Repeated urine examinations may lead one to a suspected source of infection.

If the prostate has been the seat of prolonged inflammatory changes it will probably not return to normal. However treatment and periodic observations may keep the infection to a minimum and prevent the recurrence of symptoms. When careful complete search for complications fails to disclose any contributing factor to the cause or continuance of a prostatic infection and

¹² Cabot, Hugh. *Modern Urology*, Philadelphia, Lea & Febiger, 1936
vol. 1

When repeated courses of prostatic massage fail to eliminate pus cells from the strippings completely and when definite symptoms referable to the prostate are absent, local treatment should be discontinued. If sufficient damage to the prostate has occurred such as the production of fibrosis at the vesical orifice or symptom producing prostatic calculi surgery may be indicated.

In focal infective prostatitis the prognosis depends mainly on the finding and elimination of the original focus of infection following which local treatment to the prostate should clear up the infection in most instances.

Brunet and his associates recently reported the results of treatment in 100 cases of chronic prostatitis. In 60 cases there was complete relief, with return to normal of the prostatic secretion. In another 24 the symptoms were relieved but the prostatic strippings still contained some pus. In the remaining 16 clinical improvement was not noted, but these patients all complained of some sexual dysfunction. These were not further analyzed but at least this percentage of cures should be obtained.

The outlook for patients with sexual dysfunction is difficult to evaluate. A multitude of factors may be responsible for the symptoms complained of by these patients. Although chronic prostatitis may be a factor, there are almost invariably other factors of even greater importance to evaluate and treat. Among these may be mentioned hypotension, low metabolic rate and vitamin deficiency. Psychotherapy is frequently indicated, and this treatment may often be intelligently performed by the urologist.

SUMMARY

1 Chronic prostatic infections are of common occurrence and by far the greatest percentage of cases are not caused by gonorrhea. Infection in the prostate occurs more frequently from a distant focus of infection or from some nonspecific infection in the urinary tract. Lack of sexual hygiene may be a predisposing factor in the development of a prostatic infection.

2 Urinary and genital symptoms frequently attract attention to the prostate as the source of the infection. In many instances chronic prostatitis presents no local or urinary symptoms, and attention is not attracted to the prostate. A careful prostatic examination is required to determine that the prostate is a focus of infection for symptoms elsewhere in the body.

3 The diagnosis of chronic prostatitis is made by rectal palpation and the finding of pus in the expressed prostatic secretion by microscopic examination.

4 The origin of the infection should be carefully sought for and eliminated. Prostatic massage with general hygiene, together with sulfonamide therapy, will usually eradicate the infection, although prolonged treatment may be required.

5 Complications in the urinary tract are common and should also be treated to obtain the best results from local treatment to the prostate. Among the most frequent are urethral stricture, posterior urethritis and mild chronic renal infection.

6 Infection of the prostate is so common and the prostate is so often the seat of a focus of infection that routine examination of this gland should be undertaken as frequently as that of the teeth and tonsils.

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INDICATIONS FOR VISUAL EXAMINATION OF LOWER URINARY TRACT

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Those of the profession who have personally undergone what in the vernacular of our trade, is termed a 'cystoscopic examination,' appreciate that, like the holy bonds of matrimony, it is not something to be undertaken lightly. The question is too frequently asked "Can my patient stand a cystoscopic examination?" because it is not appreciated that when such an examination is made by a trained, skilful and experienced operator, even as an office procedure, it can give valuable information obtainable in no other way and without serious discomfort or untoward aftermath. If attempted by the untrained and heavy handed, the after-effects may be slow in disappearing and the experience long remembered with horror. The narratives of patients who have undergone this modern form of torture are so distressing that after a "referring doctor" has listened to one or two he naturally becomes reluctant to subject others to such an examination unless the indications render the procedure imperative. This is regrettable, because valuable information regarding developing pathologic changes may be unnecessarily delayed. Because of this hesitancy to refer patients for a visual examination of their lower urinary tract, it is important for the general practitioner to be familiar not only with the indications that warrant cystoscopy but to know clinical conditions in which visual examination of the lower urinary tract is not only unnecessary but absolutely contraindicated. For under certain conditions the passage of a rigid instrument, such as a cystoscope, into the lower urinary tract might result in trauma and subsequent infection of serious moment.

The examiner who expects all his patients to fit a single cystoscope is to be censured. Such expectation might have been excusable a generation ago, but today, with ample equipment available, there is no excuse for one to endeavor to pass a large caliber instrument through a small caliber urethra. The dilation of urethras by sounds in order to make them fit cystoscopes, instead of using cystoscopes of suitable size, has caused much of the dread of this form of clinical investigation. Moreover, different cystoscopes are designed for different types of work, and the examiner who is not capable of utilizing the proper instrument handicaps himself and may, by being thus handicapped fail to obtain the information most desired. The cystoscope is a highly specialized instrument, it is not a "combination tool" of general utility. The examiner who has limited himself to the use of only a single type of cystoscope not alone handicaps his ability properly to observe but, by attempting to use instruments unsuited to their purpose causes trauma through the unnecessary prolongation of the procedure. Such injury is not alone painful at the time of its infliction but may result in prolonged suffering. An examiner who compels his patient to lie on the table, with a rigid instrument like a cystoscope in his urethra, while the roentgenologist gets him into position for pyelography, belongs to the horse and buggy era of his

specialty As soon as ureteral catheters are passed, the cystoscope should be withdrawn immediately. The soft ureteral catheters traversing the urethra will cause no trauma, while a rigid steel tube left in any longer than is absolutely necessary simply prolongs injury and discomfort. The shadow of a cystoscope in the bladder on an x-ray film is the trademark of an inefficient examiner.

Exposure of the genitalia during visualization of the lower urinary tract is an embarrassment to which the patient should not be subjected. It may be avoided by proper and simple draping as follows. The female patient is placed on the table in the lithotomy position, her legs are covered by leggings which reach to the thighs, and the external genitalia are cleansed with "green soap" and warm water and wiped dry. Two sterile towels are draped over the inner surface of the thighs so as to overlap slightly at the vulva and a third towel is placed crosswise on the lower part of the abdomen. The nurse separates the labia with the edges of the overlapping towels just long enough to permit the introduction of the instrument, after which the towels naturally fall together.

THE ANESTHETIC

To reduce the discomfort of cystoscopy, the choice of anesthesia is naturally of importance. To carry out the procedure painlessly insures better cooperation on the part of the patient and assists in the acquisition of reliable information. It is comparatively easy to examine the interior of the bladder successfully when the patient is relaxed and free from pain. To do so with a struggling, straining, suffering person is wellnigh impossible. In the female patient a cotton applicator dipped in 10 per cent solution of cocaine and placed in the urethra for five or ten minutes, before the passage of instruments, has become a routine procedure. Yet in so simple a procedure—usually left to a nurse—differences in the results may be obtained. If the swab is too large for the urethral meatus and not lubricated, its vigorous insertion by a careless nurse may cause acute discomfort. To carry out the procedure properly, topical application of some of the 10 per cent solution should first be applied to the meatus, then the swab, well lubricated as well as saturated with the 10 per cent cocaine solution, should be gently inserted for a short distance into the urethra. When a few minutes have elapsed a second swab should be inserted still farther. If this procedure is followed out, little discomfort will result when the cystoscope is passed. If, in addition, a few cubic centimeters of one of the cocaine derivatives is injected into the bladder in order to anesthetize the trigone, the entire procedure loses most of its discomfort. For such use procaine hydrochloride is useless. The fact that it has no effect on mucous surfaces is frequently overlooked. The dangers associated with the use of cocaine are apt to be exaggerated but they should not be disregarded. It is well to remember that its anesthetic action, when applied to mucous surfaces, is greater than any of its allies. Its rapid deterioration in solution and the formation of toxic substances make the injection of any stock solution into as highly absorbable an area as the posterior urethra highly dangerous. When cocaine is used, it should therefore be made up fresh for each patient. The dissolving of two $2\frac{1}{4}$ grain (0.15 Gm.) tablets in an ounce (30 cc.) of sterile water immediately before injection into the male urethra has proved in many thousands of cases to produce the most

efficient local anesthetic. When this is injected, any excessive amount of hydrostatic pressure or the too rapid injection of the solution should be assiduously avoided. As soon as the urethra is well dilated a penis clamp is applied, after which the meatus, as in the female, may be treated with a swab dipped in a 10 per cent solution. When the urethra has been recently traumatized, as by the passage of sounds or other instruments and in all cases in which there is any question of idiosyncrasy for the drug, one of the cocaine allies may be used. These have the advantage over cocaine that they do not lose their anesthetic power on boiling and so are easier to sterilize. They do not deteriorate and become toxic when left in stock solution and are therefore more readily available. The most frequently used of such solutions at present are 2 per cent solution of Intracaine and a 4 per cent solution of metycaine. Diathane is also very efficient as a local anesthetic, but immediately after injection it produces a burning sensation which is most annoying.

When excessive irritability of the urethra and bladder mucosa has not resulted from either acute or chronic infections, as in tuberculosis, such anesthetics will render skilled examinations of the lower urinary tract practically painless. If the office affords facilities for recovery from complete narcosis, of course no anesthetic is as satisfactory for such work as pentothal sodium. If it is administered by slow and constant intravenous injection in just sufficient amount to keep the patient unconscious, his recovery from the narcosis may be so rapid as to permit him to leave the examining table as well as the office as an ambulatory patient. In such a case it is imperative to have relatives or friends accompany him. The fortifying of pentothal anesthesia by pentobarbital sodium or morphine is contraindicated. It only prolongs the time the patient is incapacitated and adds nothing to the anesthesia. Moreover, by prolonging the patient's inability to cooperate it makes the taking of clear pyelograms difficult.

Because of the disadvantages of having the patient unconscious and unable to cooperate, some urologists prefer to use caudal anesthesia in small enough doses so that the patient is ambulatory after a short period of recovery. The inability of some patients to regain the full use of their lower extremities for a more extended period is the chief objection to this type of anesthesia as is the occasional occurrence of a rather sharp drop in blood pressure following its application. For the greater number of male patients instillation anesthesia as described is the most generally employed not because it is the most efficient, but because it is the most rapid and easy of application.

PRESENCE OF INFECTION

A microscopic examination of the catheterized urine in the female furnishes the chief indication for or against visual examination of the lower urinary tract. If the urine is highly infected, containing considerable numbers of pus cells it should be stained by the Gram method as a matter of routine to determine what types of organisms are present. Nothing is so likely to cause a patient to be severely ill with chills and high fever as cystoscopy in the presence of infection, especially if it is acute and trauma results from the passage of instruments or the overdistention of the bladder or renal pelvis. Therefore before instrumental examination is undertaken in either sex the type of infecting organism should be ascertained by stain and culture and every

Effort made to render the urine bacteriostatic, at least to the specific organisms, before proceeding to investigate the damage they have caused. The general habit of subjecting patients to cystoscopy before undertaking to render their urine bactericidal explains to a large extent the dread of the examination so many have developed because of its delayed febrile reactions.

If the history and physical findings as well as the examination of the urine indicate that one is dealing with a tuberculous infection, the experienced urologist will realize at once that the examination will probably be exceedingly painful unless precautions are taken. Few inflammations are more painful than a bladder mucosa irritated by tuberculous toxins. With such patients it is always preferable to employ the most efficient anesthesia. This is done, not alone to lessen the suffering of the patient, but to aid the examination. To permit satisfactory examination of a diseased bladder, its owner must be free of pain. The attempts to examine inflamed and infected lower urinary tracts without adequate anesthesia is responsible for more mistaken diagnoses than any other single factor.

To infect a normal urinary tract it is necessary to traumatize it. Experiments have shown that its exposure to bacteria without trauma will not cause infection. One is inclined to conclude that the passage of instruments is the most common cause of trauma. True it is a common cause, it should be avoided by first filling the urethra with a suitable lubricant or lubricating the instrument most thoroughly and passing it with great care and gentleness. A more frequent cause of trauma is the overdistention of the bladder resulting in spasm. The instrument may be passed with skill, but when the bladder is filled beyond comfort trauma is produced, which in the presence of infection will be followed inevitably by fever and chills. When the examiner has discovered a pathologic process in the urinary tract nothing but added trauma is gained by long continued gazing at it. Once the lesion is observed, the examination is concluded as far as diagnosis is concerned. Such observation should require at the most but a few minutes. The report of cystoscopy consuming from fifteen to thirty minutes' duration reflects the inexperience of the examiner and in no way indicates his thoroughness or efficiency.

X-RAY EXAMINATION

It is being more and more generally recognized that many pathologic conditions of the lower urinary tract formerly believed to require visualization for their proper examination can now be as accurately diagnosed by other means. I refer particularly to prostatic obstruction. All cystoscopic instruments are rigid instruments and all enlargements of the prostate render the passage of such rigid instruments a possible source of trauma. An x-ray film of the lower urinary tract will determine the presence or absence of stones in the bladder or prostate. The injection of the bladder with air or an opaque medium will betray the presence or absence of diverticula and the extent of trabeculation the prostatic obstruction has produced. The examiner's finger in the rectum, in most cases, will reveal the type of enlargement and its gross extent. A soft rubber catheter will determine the amount of residual urine present. There thus remains little or nothing to be added from cystoscopy. The urologist who is dependent on the cystoscope to determine what method of treatment is best to employ for the relief of prostatic obstruction is apt to increase the obstruction by his instrumentation

so much that complete urinary retention frequently results. He is then faced with undertaking surgical measures in an area needlessly injured and infected and thus increasing the risk of postoperative febrile reaction, if not more serious complications. When residual urine is present, only trauma is necessary to add secondary infection, an unhappy prelude to any form of surgery. Probably in no condition has instrumentation been more painful and uselessly employed or yielded less worthwhile information than in routine cystoscopy of the elderly male with urinary obstruction the result of prostatic hypertrophy.

SUPPLEMENTARY INFORMATION

With the advent of intravenous urography, it seemed for a time that the need of instrumental examinations, particularly the passage of ureteral catheters, would be greatly curtailed. This has not proved to be the case. The unsuspected pathologic condition that has been revealed by the general use of intravenous pyelography has made evident the need for much supplementary information. This can be obtained only by the ureteral catheterization and the visual examination of the lower urinary tract. To attempt to diagnose and undertake treatment of a pathologic condition in the urinary tract simply by evidence obtained from intravenous urography is a responsibility that no wise or conscientious urologist, much less a general practitioner, should care to assume. Unless all possible information from all possible sources is at hand, both diagnosis and treatment are of doubtful validity.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. BALLENGER, McDONALD AND COLEMAN, DRs. McKIM, SMITH AND RUSII, DR. HENLINE AND DR. BUMPUS

DR. MEREDITH F. CAMPBELL, New York. It was gratifying that Drs. Ballenger, McDonald and Coleman in their discussion of the sulfonamide treatment of gonorrhea of urethritis did not belabor us with considerations of the sulfonamide blood level. It was observed in the Urology Department of the College Clinic of New York University College of Medicine that practically all patients with gonococcal infection did as well on 2 Gm. as on 4 Gm. a day of a sulfonamide compound. Subsequent experience continues to bear this out. They emphasized the importance of the small external meatus in the genesis and perpetuation of a chronic urethral discharge, which may or may not be bacterial. A small meatus, with or without faulty sexual hygiene, will engender prostatitis, the clinical manifestations of which usually cause the diagnosis of nongonorrheal or nonspecific urethritis to be made. I was especially pleased that the authors placed a satisfactory meatal caliber of the normal adult at 26 F. rather than smaller. The abnormally small meatus in the young is generally so congenitally and in most instances is overlooked unless complicating ulceration with or without incrustation and scab formation and hematuria attracts clinical attention. Wide meatotomy and the maintenance of a wide open orifice rather than salves and ointments is the indicated treatment. Following meatotomy it is my practice periodically and progressively to dilate the incised orifice with steel sounds rather than to rely on domestic improvisations of the patient. Our experience in the treatment of well over a thousand enuretic children subscribes to the authors' statements regarding this condition. Granted that the syndrome commonly designated clinically as enuresis is a functional problem in 95 per cent of children, is generally directed against the mother and in most instances responds to psychotherapy, gold stars and the like, in all cases not responding in three to four months of intensive medical treatment or psychotherapy a thorough urologic examination should be carried out. About 1 in 7 of these children cannot empty his bladder completely.

that is, there is residual urine, and in many others grave urographies will be revealed. Although strictly this is not enuresis, unfortunately the fact remains that today nearly all children with night or day wetting are persistently and benignly treated for enuresis and without adequate urologic study. In females a tight urethra with urethritrigoitis is the commonest lesion we have found, in males, inflammatory and obstructive lesions of the prostatic canal and bladder outlet rank first. Fortunately, most of these rapidly respond to urethral dilation, with or without local chemotherapy. Yet urethral valves of the prostatic canal, contracture of the vesical outlet and hypertrophy of the verumontanum, for example, can be promptly eradicated by transurethral electroresection with miniature instruments. Study of a series of enuretic children will reveal nearly, if not all, of the deep urethral lesions which Drs. Ballenger, McDonald and Coleman discuss in the latter part of their paper. Enuresis may be merely an annoying condition and a nuisance, but it may also reflect a grave urologic disease of vital importance to the child.

DR EDGAR G. BALLENGER, Atlanta, Ga. The remarkable technical perfection of modern urologic instruments is not an unmixed blessing. The very perfection of the gadgets often leads to their ill advised use. Dr. Bumpus has directed our attention to the precipitate use of cystoscopic studies before the employment of milder urologic measures which perhaps might make cystoscopy unnecessary. Moreover, he emphasizes the importance of the preliminary administration of urinary antiseptics to minimize the stormy reactions which may follow cystoscopic investigations. It is especially against the routine cystoscopic study of the prostate and prostatic urethra of elderly men that I wish to join his protest. In the majority of instances in which urinary obstruction is the chief symptom, adequate facts may be obtained without cystoscopy. The history of a gradually weakening urinary stream, undue frequency in voiding and nocturia especially during the latter part of the night and the presence of residual urine in an elderly man strongly suggest the existence of vesical neck obstruction. By rectal palpation the size and consistency of the prostate gland is easily ascertained. An x-ray film will show whether or not stones are present and a cystogram will demonstrate the amount of intravesical protrusion of the prostate as well as diverticula if present. Beyond the information gained from these studies little else is required except a general physical examination, urinalysis, renal functional tests and blood examinations. Cystoscopy when the prostate is hypertrophied is likely to bring on acute retention even in uninfected patients. In such patients the disturbing reactions are often more severe than a transurethral resection of the obstructing prostate. Just as we usually regard the enlarged prostate as a contraindication for cystoscopy, so we think that a cystoscopic study is clearly indicated if the patient is having difficulty in voiding following resection, in such instances cystoscopy even several months or longer after resection may show minor abnormalities which are correctable by office procedures. These are not likely to be followed by disturbing reactions.

DR THOMAS D. MOORE, Memphis, Tenn. There exists a widespread tendency to underestimate the importance of symptoms referable to the bladder in women when examination of the urine is negative. The line of least resistance is to attempt to explain such symptoms on the basis of "too much acid" or "pressure on the bladder" perhaps from malposition of the uterus or a fibromyoma, and thus all too often investigation of the urinary tract is limited to the analysis of a voided specimen of urine. As pointed out in the presentation of Drs. McKim, Smith and Rush, pathologic conditions involving the urethra, with particular reference to chronic inflammatory processes with or without the existence of urethral caruncle, predominate as etiologic factors in such complaints. An accurate estimate of the condition of the urethra is not at all a complicated procedure if an endoscopic view is obtained. Lesions involving the urethra may be easily overlooked with the average indirect vision cystoscope. It has been my experience that chronic nonspecific urethritis in women is often refractory to treatment, and in such cases palpation of the urethra with a sound in place will often reveal small shothike infiltrations due to chronic inflammatory changes in the periurethral glands. Massaging the urethra lightly over the sound, preferably after the instil-

lation of a mild antiseptic, may hasten recovery. Gradual and gentle dilation of the urethra also has been of definite value and is attended by a minimum of trauma if a rubber covered Kollmann dilator is employed. Dilations given at intervals of ten days to two weeks may finally be carried to 35 to 40 F. The authors do not mention allergic states involving the bladder or urethra. The possibility of sensitivity, especially to certain foods, and attendant symptoms referable to the bladder should be kept in mind, it is not a rare occurrence. Overindulgence in soft drinks containing caffeine can be a cause of dysuria. For example, a young woman was examined because of frequency and dysuria of several months' duration associated with nycturia of six to eight times. The frequency of urination was of such degree as to arouse a suspicion of urinary tuberculosis. The analysis of a catheterized specimen was reported negative. Cystourethroscopic examination was also negative. It was discovered that this patient was consuming six to ten coca-colas daily. Upon discontinuing this beverage the symptoms promptly disappeared and there has been no recurrence to date. Probably all will agree that chronic interstitial cystitis, or panmural fibrosis, is the most stubborn condition to eradicate of all the entities mentioned in the foregoing article. Patients who do not respond to hydraulic distention, treatment with silver nitrate, or light electrocoagulation, and who have sufficiently distressing symptoms, should be considered possible candidates for presacral neurectomy. It has been found that prompt and lasting relief may follow this operation.

DR HARRY R. TRATTNER, Cleveland. From a study of the prostatic urethra in postmortem specimens and by cystourethroscopy some factors involved in drainage from the prostate gland and seminal vesicles can be appreciated. Since many of the ductal orifices are so small as to be invisible to the naked eye, and since many of the openings are situated in the prostatic sinus close to the base of the verumontanum while the ejaculatory ducts open through the body of the veru, it is easy to understand the possibilities of congestion, edema, inflammation or tumor in producing partial or complete occlusion of these ducts. The employment of the sulfonamide drugs in acute or subacute specific or nonspecific urethritis has often eradicated the infection before an extension to the prostate and seminal vesicles has occurred. In this manner the sulfonamides have greatly reduced the incidence of prostatitis and seminal vesiculitis. In other instances urinary tract infections are sometimes eradicated by their use, thereby eliminating a focus of infection. Though the action of these drugs may continue locally in some instances of acute and subacute infection of the prostate and seminal vesicles, their value diminishes greatly in the treatment of chronic infection of these organs. Here their effectiveness becomes abruptly limited to occasional temporary amelioration during an acute exacerbation of a chronic infection. Though a majority of the cases of chronic prostatitis can be greatly benefited or resolved by prostatic massage, removal of foci of infection, dilation when urethral stricture is present and general hygienic measures as described by Dr. Henline, yet there remain those cases that defy response. Intractable chronic prostatitis can be classified into two groups: (1) where there is involvement of the prostatic urethra, prostate gland or vesical neck in a pathologic process requiring removal by surgical means (usually transurethral resection) before adequate drainage from the prostate and seminal vesicles can be established. In 1933 Davis demonstrated this type of pathologic condition and there-with the good results in some cases of chronic prostatitis following such therapy, (2) cases in which local abnormalities cannot be discovered. Here additional information may be necessary concerning the pathologic anatomy of the prostate. Access to the parenchyma of the prostate for the purpose of roentgenography and medication of tubuloalveolar units of the gland seemed desirable. For this purpose a special catheter was devised and described in the December 1942 number of the *Journal of Urology*. Though this method of direct attack has not resulted in benefit in all cases of chronic prostatitis falling in this category, a majority responded by a continued reduction in the leukocytic content of the prostatic secretion in some while in others there was a continued disappearance of leukocytes in this secretion. In some cases the prostatogram brought to light distortion of architecture of the internal anatomy of the prostate, such as tubuloalveolar ectasia, while in some,

astic cavities were found within the gland. In others a concomitant pathologic condition, such as diverticulum in the posterior urethra, was found. In regard to the occurrence of epididymitis following the use of the partition catheter in chronic prostatitis, this complication took place in 2 of 80 cases in which this technic was employed. The seminal vesicle was filled with opaque solution in only 1 case of 80. Thus I have been able to confirm Lowrey's observation that the ejaculatory ducts are closed with a rise of pressure within the prostatic urethra in a manner similar to compression of the intravesical portion of the ureters when the bladder is distended. The incidence of epididymitis should be minimal or negligible provided the seminal vesicles are free of infection. The catheter technic is indicated in cases of chronic prostatitis only when more conservative measures have failed over a reasonable period of time.

DR ROY B. HENLINE, New York. I should like to stress the fact that chronic prostatitis may exist in the presence of normally voided urine and without any urinary symptoms. A multitude of vague symptoms in the lower abdomen, back or thighs may be caused by a chronically infected prostate. In seeking the cause of these symptoms an examination is not complete without a careful palpation of the prostate and a microscopic examination of its strippings. The most important single consideration in treating chronic prostatitis is the recognition and elimination of the systemic focus of infection. Intelligent application of prostatic massage will benefit most patients but if carried out too frequently or for prolonged periods, may cause unfavorable reactions. A thorough urologic study is indicated of those patients who either do not respond to local treatment or who have recurring infections in the prostate. One of the most commonly overlooked causes for the failure of chronic prostatitis to respond to prostatic massage is a small urethral meatus. In such cases meatotomy becomes essential. Subsequent adequate urethral dilations with sounds at ten to fourteen day intervals will frequently benefit the prostatic infection. There is no standard treatment for chronic prostatitis which can be applied to all patients with equal benefit. Intelligent treatment of these patients may require the cooperation of the urologist with specialists in other fields. Some patients respond to simple measures, while others may tax the ingenuity of the urologist to the utmost.

DR. JOHN L. EMMETT, Rochester, Minn. Dr. Bumpus has presented a criticism of urologic procedure which is timely and should be taken to heart by every urologist. It is well for the physician to pause occasionally during his routine work and consider diagnostic procedures as they are interpreted by the patient's sensory nervous system. The goal in all good medical practice should be to employ sufficient diagnostic procedures to arrive at an accurate diagnosis. Fewer procedures than this are inadequate. More than this are not in the interest of the patient either physically or economically. As Dr. Bumpus has pointed out many unnecessary cystoscopic examinations are performed. Less traumatizing examinations, such as plain roentgenograms, excretory urograms, two glass specimens of urine for microscopic examination, cultures and acid fast and gram stains of the urine, digital examination of the prostate gland through the rectum, microscopic examination of the prostatic secretion and careful examination of the external genitalia will often yield sufficient information for satisfactory treatment. A trial course of chemotherapy for a week or ten days is often most helpful in deciding whether or not cystoscopic examination should be undertaken. The wise physician will employ cystoscopy only when it is definitely indicated, however, he will not allow himself to fall into diagnostic errors from "guessing" when cystoscopy is necessary to obtain pertinent information.

DR. H. C. BUMPUS, JR., Pasadena, Calif. Because it is one of the most exact of clinical specialties, an accurate urologic diagnosis can frequently be obtained by several different methods. It does not follow, however, that more than a single method need be employed. Once a diagnosis of a tuberculous infection in a kidney is confirmed by the finding of acid fast bacilli in the urine from it or an extensive hydronephrosis is discovered by withdrawal of its contents it is not imperative to make a pyelogram as confirmatory proof of what is already

a known fact, since unnecessary examination may add not alone to the cost but also to the risk of investigation. Miliary tuberculosis has followed pyelography, and septicemia has followed overdistention of a kidney pelvis. The finesse of the famous surgeon who was able to assure his patient that he did have a stone in his bladder by simply placing his hand on the pubis, after his colleagues had subjected the patient to the expense of x-ray examination and the pain of a cystoscopic examination, does have its points!

PINTA (MAL DEL PINTO CARATE) IN CONTINENTAL UNITED STATES

REPORT OF THREE CASES WITH LATE MANIFESTATIONS
AND REVIEW OF THE SALIENT
FEATURES OF THE DISEASE

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Pinta, called also mal del pinto or carate, is a non-venereal type of spirochetosis limited almost exclusively to the dark races. The initial lesion appears on the cutaneous surface at the exact site of entrance of the causative organism, *Treponema carateum*, after an incubation period of seven to twenty days. In five months to a year the secondary lesions, or pintids, appear. These are disseminated pink, red, slate blue, brown or black macules and plaques, grouped around the primary lesions. Pintids may resemble the lesions of psoriasis, syphilis, trichophytosis, lichen planus or eczema. They are associated with erythema and, in the form of the disease common in Cuba with follicular keratosis and palmar and plantar keratoderma. In the terminal stage—the tertiary, or dyschromic, stage—achromic and hyperpigmented spots and atrophy of the skin are encountered. In this stage the complement fixation and precipitation reactions are strongly positive and adenopathy may be present. Hypertension, *juvta-articular* nodules, cardiovascular lesions and changes in the spinal fluid are other late manifestations.

Pinta has never before been reported in continental United States. However as Fox and Pardo-Castello¹ have stated there is no reason why it should be limited to any country or even to the tropics. In all probability there are in the southern part of the United States persons with pinta which has been diagnosed as vitiligo, postsyphilitic dyschromia or residual achromia secondary to various inflammatory dermatoses. The 3 patients who are the subjects of this report were born respectively in Canada, Louisiana and Alabama.

Pinta was considered a mycotic disease until 1926, when Menk² discovered that the Wassermann reactions of 74.6 per cent of his patients were strongly positive. He concluded that the disease was in some way related to an old spirochetosis. In 1927 Gonzalez Herrejon³ found that almost all of his patients with pinta had strongly positive Wassermann and Kahn reactions although they presented no evidence of syphilis. This startling discovery, together with the fact that the cutaneous lesions underwent rapid involution after

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¹ Fox, Howard and Pardo-Castello. Personal communications to the author.

² Menk, W. The Percentages of Positive Wassermann Reactions Found Associated with Various Diseases in Fifteenth Annual Report of the Medical Department of the United Fruit Company, New York, United Fruit Company, 1926.

³ Gonzalez Herrejon, S. cited by Fox.⁴

intravenous therapy with arsenical compounds, gave support to the theory that pinta was a type of spirochetosis

The strongly positive serologic reactions encountered led some clinicians to believe, despite the contention of Fox⁴ to the contrary, that pinta was related to both frambesia and syphilis. Several investigators found additional evidence indicating a relationship between pinta and syphilis. Thonnard-Neumann, Camacho Moya and Brewster⁵ and later Pardo-Castello and Ferrer⁶ and Saenz Grau Triana and Alfonso Armenteros⁷ observed cardiovascular lesions, such as aortitis, aneurysm, aortic regurgitation and enlargement of the heart. Saenz, Grau Triana and Alfonso Armenteros discovered changes in the spinal fluid resembling those associated with cerebrospinal syphilis (an increased content of globulin, a syphilitic colloidal gold curve and positive Wassermann, Kahn and Meinicke reactions). Clinical manifestations of syphilis of the central nervous system were absent. In 1938 Grau Triana and Alfonso Armenteros discovered the causative spirochete in lymph from the cutaneous lesions, in the lymphatic glands and the tissues. The discovery was confirmed two days later by Pardo-Castello. The organism was indistinguishable morphologically from the spirochete of frambesia and that of syphilis.

In 1939 all doubt as to the relationship of pinta to frambesia and to syphilis was dispelled when Leon y Blanco⁸ published the results of his classic and heroic experiments on pinta in Mexico and Cuba. Pardo-Castello translated the reports and summarized them. The experiments were performed on four different groups of patients, the first of which included Leon y Blanco himself. He gave himself and 17 Mexican volunteers intracutaneous inoculations of material from Mexican patients with typical pinta. Four Cuban subjects in Havana were inoculated with material from Mexican and Cuban patients.

Leon y Blanco proved that the achromic stage of pinta, which to that time had been the only manifestation recognized, is in reality the tertiary, or late dyschromic, stage. He found that the initial lesion is always a closed papule that never ulcerates. It usually appears on the extremities, most often on the legs, but occasionally is found on the face or the neck. For several months this type of lesion remains the only manifestation of the disease and several may be present at once.

After five months or more, signs of dissemination appear in the form of multiple macules or papules that grow and spread peripherally for several inches, just as do the initial lesions. In the course of several weeks circinate plaques are formed, the secondary lesions, which León y Blanco called pintids but which are popularly known in Mexico as empeines. These may be smooth or scaly. The initial lesions finally become part of the disseminated secondary manifestations and cannot be distinguished from them.

The lesions, which usually are superficial, are sometimes infiltrated, but they never ulcerate or produce a break in the epidermis. The earlier ones are faintly

pink, but they soon darken according to the amount of pigment and the congestion in the affected skin. In white patients the lesions are pink, red or brown, while in the dark races they are purple, blue, slate colored or black. Scaly lesions may have a dusty, ashen appearance, and the scales are usually adherent and powdery. When the scales are large the patches resemble the lesions of psoriasis, trichophytosis, lichen planus or eczema. Groups of pintids coalesce to form larger plaques.

In some cases the lesions involve only a small area and in others they cover the greater part of the cutaneous surface. Usually, however, they are found on the extremities and bony prominences, especially on areas not covered by clothing. After several months when the pintids pass into the chronic stage, they tend to be symmetrically arranged, especially on the hands and feet. Old lesions have a tendency to show slight central involution, indicated by a lighter color or even achromia. The border then appears darker and advances on the normal skin requiring several months or a year to reach a diameter of from 1 to 2 inches. They frequently have a well margined and sometimes polycyclic border.

According to Pardo-Castello and Ferrer⁶ the differentiation of pintids from the lesions of leprosy and other inflammatory dermatoses may be difficult. However, the presence of normal sensation for pain and temperature in pinta and the easy demonstration of T carateum in the lesions distinguish the disease from leprosy.

During the secondary stage of the disease, which may last a year or longer, the Wassermann and Kahn reactions are positive in only 60 per cent of the cases. The general health is never affected. The spirochete is easily demonstrated by dark field examination in lymph extracted from the lesions. Discrete enlargement of the lymph nodes has been reported, and spirochetes have been recovered from them. Sáenz, Grau Triana and Alfonso Armenteros⁷ reported superficial enlargement of the lymph nodes in the inguinal region, of the epitrochlea and of the biceps muscle.

The secondary stage lasts from several months to more than a year. Then the lesions become dyschromic, producing the clinical picture of the late form of the disease so well known in Ecuador, Colombia, Cuba, Mexico and Venezuela. The lesions are symmetrically arranged usually on the extremities, and consist of alternating areas of depigmentation and hyperpigmentation. The resulting clinical picture is that of vitiligo. Cases in which there is symmetrical arrangement of dyschromic lesions on the face and trunk occur in all the countries mentioned except Cuba.

The pigmented lesions of the third stage are coffee color, slate blue or jet black according to the darkness of the normal skin. In white persons they are light brown. They may be localized on one extremity or on a hand and a foot on opposite sides. Follicular keratoses and areas of desquamation have been reported. The amount of desquamation varies in different persons and on different areas but the scales are usually branny and adherent. Atrophy of the skin in the achromic areas may occur in patients whose disease is of long duration.

Pardo-Castello and Ferrer⁶ reported involvement of the mucous membranes. One of their patients had a triangular area of hyperpigmentation on the dorsum of the tongue, and another had patches of stippled pigmentation on the inside of the cheeks and on the palate.

4 Fox, Howard. Mal del Pinto as Observed in Mexico. Its Relation to Carate, read at the eighth International Dermatological Congress Copenhagen, 1930.

5 Thonnard-Neumann, E., Camacho, Moya J., and Brewster, K. C. Is Carate (Pinta) a Dermatomycosis? in Nineteenth Annual Report of the Medical Department of the United Fruit Company, New York, United Fruit Company, 1930, pp. 101-106.

6 Pardo-Castello, V., and Ferrer, Ismael. Pinta, Mal del Pinto Carate, Arch. Dermat. & Syph. 45: 843 (May) 1942.

7 Sáenz, Braulio, Grau Triana, Juan, and Alfonso Armenteros. J. Pinta in Cuba, Arch. Dermat. & Syph. 41: 463 (March) 1940.

8 Leon y Blanco, F., cited by Pardo-Castello and Ferrer.

It is in the late stage of the disease that the previously mentioned complications—hypertension, cardiovascular lesions and changes in the spinal fluid—are observed. Thonhardt-Neumann, Camacho Moya and Brewster⁸ reported cardiovascular changes in 80 per cent, Saenz, Grau Trirna and Alfonso Armenteros⁹ in 23.3 per cent and Pardo-Castello and Ferrer⁶ in 64.5 per cent of patients with *pinta*. Changes in the spinal fluid were observed by Saenz, Grau Trirna and Alfonso Armenteros in 10 per cent and by Pardo-Castello and Ferrer in 52.1 per cent. Pardo-Castello and Ferrer observed 8 patients with hypertension in 5 of whom no aortic changes were demonstrable. The Wassermann and Kahn reactions of all the patients were strongly positive in this stage. Lymph from the affected areas, except those which are old, atrophic and burned out, is rich in spirochetes. The vitiligo areas vary in color from milk white to ashen gray to yellowish white.

In the Cuban form the cutaneous lesions are not so regular or so prominent as in other forms. In most of the Cuban and in many of the Mexican patients the initial lesions and the early disseminated manifestations are slight and transient and may be overlooked. Dyschromic areas in which depigmentation alternates with slate blue hyperpigmentation are observed on the dorsal surfaces of the hands and feet, on the forearms and on the legs. The face, trunk, abdomen and thighs are usually free from lesions.

Diffuse or punctate palmar and plantar hyperkeratoses with or without fissures, which are characteristic of Cuban *pinta*, are absent in the Mexican form. Such hyperkeratoses never affect the dorsal surfaces of the hands and feet. They begin as slate blue hyperpigmented spots and simultaneously enlarge peripherally and increase in number. In time keratoses may entirely cover the palms and soles. According to Gonzalez Herrejon, dyschromic changes of the palms are rare in Mexican *pinta*. The terminal stage is represented by achromic vitiligo areas. Symmetrical depigmented triangles on the flexor surfaces of the wrists, which are a common feature of Cuban *pinta*, also occur in Mexican *pinta*. Pardo-Castello expressed the opinion that the more limited character of the chronic form of Cuban *pinta* is undoubtedly the result of constitutional factors and not of differences in the etiologic agent.

Leon y Blanco's second group of patients consisted of 3 Mexicans known to have syphilis. He inoculated them intracutaneously with material taken from Mexicans with *pinta* and containing the causative spirochete. Numerous disseminated cutaneous lesions, or *pintids*, developed in all 3 subjects. Inoculation of another person with lymph from their lesions resulted in the development of *pinta* but not of syphilis. These experiments established the individuality of *pinta* as a type of spirochetosis and also proved that patients with active syphilis are susceptible to *pinta*.

The third group consisted of 3 patients who had had *pinta* but had been treated with and apparently cured by arsenical preparations administered intravenously. Intracutaneous inoculation with material containing *T. carateum* resulted in the development of an initial lesion but no disseminated lesions, or *pintids*, appeared. The fourth group, 5 patients with active late dyschromic lesions of *pinta*, were inoculated with similar material intracutaneously and were observed for forty-nine days but no initial lesion developed.

The last two experiments established that reinfection with *T. carateum* is only partially successful in the early stages of *pinta*, that patients with late dyschromic lesions cannot be reinfected and that an attack of *pinta* confers immunity. By means of similar experiments carried out in Cuba, Leon y Blanco proved that Mexican and Cuban *pinta* are the same disease.

With regard to the mode of transmission of *pinta*, Pardo-Castello and Ferrer⁶ stated that infection probably results from local contact with affected persons since experimental inoculations can be made through minute and superficial abrasions of the skin. When one recalls that Leon y Blanco found *T. carateum* in the sweat of the surface of the affected skin of his patients, it is not surprising that the disease should be spread by simple contact. No case has been reported in which *pinta* was of venereal origin.

Pardo-Castello and Ferrer stated that only 12 per cent of their Cuban patients were white persons, most of the remaining 88 per cent being Negroes. In Colombia, Mexico and Venezuela the majority of the patients were Indians or mestizos, the latter being the most frequent sufferers. In Mexico children were frequently affected, but Pardo-Castello and Ferrer did not find any in whom the disease was of congenital origin. Their youngest Cuban patient was 23 years old, but they stated that their colleagues had had patients who were only 10.

The histopathologic changes of the late lesions of *pinta*, which are the best known and which in the main were shown by our sections, have been described by Ochotorena,⁹ Gonzalez Herrejon and Pallares¹⁰ and Pardo-Castello and Ferrer.⁶ They consist of atrophy of the epidermis, absence of pigment in the basal layer, huge accumulations of melanophores in the upper part of the corium, alternate or continuous bandlike infiltration in the papillary and subpapillary layers and, when there is hyperkeratosis, accumulation of horny material in the atrophied epidermis. Extracellular grains of pigment may be present in and between the cells of the infiltrate. In the vitiligo patches there are atrophy of the epidermis, absence of the papillae, complete absence of pigment and sclerosis of the connective tissue. These changes represent the final atrophic and cicatricial stage of cutaneous *pinta*.

The treatment of *pinta* is similar to the treatment of frambesia and of syphilis. Gratz¹¹ of Colombia was the first to call attention to the use of compounds of mercury and of arsenic for *pinta*. Arsenical preparations administered intravenously and bismuth and mercury compounds administered intramuscularly are specific. However, as in the treatment of frambesia and of syphilis, the arsenical compounds are the more rapidly effective. Mexican and Cuban dermatologists have found that the effect of treatment on the serologic reactions was not so good as the rapid involution of the cutaneous lesions had led them to expect. The Wassermann and Kahn reactions of many of their patients remained persistently positive in spite of the most intensive and prolonged treatment. The serologic reactions of some patients became negative but only slowly. Our limited experience with *pinta* in 3 patients coincides with the foregoing observations.

9 Ochotorena I. Estudios histológicos y micológicos acerca del mal del pinto. Mexico: Departamento de Salubridad, 1929.

10 González Herrejon S and Pallares M. cited by Pardo-Castello and Ferrer.⁶

11 Gratz R. M. cited by Holcomb R. C. *Pinta as Treponematoses. A Review of the Literature.* U. S. Nav. M. Bull. 40: 517 (July) 1942.

The pathogenicity of *T. carateum*, according to Pardo-Castello, is much less than that of *Treponema pallidum*, and pinta is therefore much less dangerous than syphilis. However, because of the persistence of positive serologic reactions in the absence of active lesions, and especially because of the high incidence of cardiovascular complications, the treatment of pinta should be continued until the serologic reactions are negative. When these reactions remain positive in spite of intense and prolonged therapy with compounds of arsenic and of the heavy metals, fever therapy or treatment with nonspecific proteins, followed by therapy with heavy metals, is worthy of consideration.

Pardo-Castello and his associates studied the histories and examined the histopathologic sections and photographs of our patients and agreed that in cases 2 and 3 the disease was exactly the same as the Cuban form of pinta. In case 1 the type was that seen in Mexico, Colombia, Ecuador and Venezuela. Unfortunately, because of an oversight, the diffuse bluish areas on the inner sides of the thighs, the slate colored hyperpigmentation on the cheeks and the mottled areas on the flexor surfaces of the elbows and the lower thirds of the arms in case 1 were not photographed in detail. By the time the error was discovered, the lesions had been cured by intravenous injections of an arsenic preparation and intramuscular injections of a bismuth

diate vicinity of the plaques. The surrounding skin had retained its normal light brown sheen.

The patient stated that in the areas of depigmentation on her body there had been, years before, hyperpigmented lesions similar to those on the malar eminences.

The skin on the inner sides of the breasts, on the submammary and lower sternal areas, on the entire abdomen, on the flexor and lateral surfaces of the thighs and on the lower lumbar and sacral regions presented a strikingly mottled appearance, the result of contrast between large vitiligo areas and normal light brown skin. Pinhead sized to pea sized vitiligo areas were present over the lateral surfaces of the neck and the entire dorsal surface of the trunk. The flexor surface of the lower third of each upper arm and of the upper third of each forearm had a finely reticulated appearance due to the presence of partially depigmented, faintly outlined vitiligo areas the same size as those on the neck and the trunk and peculiar, sharply outlined and slightly elevated bluish black pinhead sized areas on a background of normal skin. There were a few isolated partially or completely depigmented lesions ranging in size from that of a pea to that of a dime (18 mm) on the dorsal surfaces of the hands, on the lateral and flexor surfaces of the legs and on the lateral surfaces of the ankle joints but not on the dorsal surfaces of the feet. The palms and soles were free from dyschromic changes.

An area the color of diluted laundry bluing and level with the skin was present on the inner side of each thigh from the genitocrural region almost to the knee. The hyperpigmentation extended around to the extensor surface of the thigh for several inches. Two intensely pruritic black stippled lesions were situated midway between the scapulas. They were elevated about 3 mm and were the size and shape of lima beans, resembling the lesions of psoriasis.

The results of additional antisyphilitic therapy were striking. Two months after treatment with neoarsphenamine had been instituted, the hyperpigmentation on the thighs as well as that on the malar eminences had disappeared. An additional three months of combined treatment with bismuth and arsenic caused complete involution of the psoriasiform lesions and the reticulated areas on the arms. Before treatment was given in our clinic dark field examination, impregnation of the tissues with silver, examination of stained smear preparations and inoculation experiments on animals all failed to reveal the presence of spirochetes. Study of the spinal fluid and cardiovascular and neurologic examinations revealed no abnormalities.

The Wassermann and Kahn reactions of the blood were both strongly positive Dec. 17, 1940 and April 7, 1941. Sept. 15, 1941 and April 7, 1942 the Wassermann reaction of the blood was negative, but the Kahn reaction was still strongly positive.

Biopsy of a depigmented area on a hip revealed the following microscopic changes. The epidermis showed pronounced hyperkeratosis. The rete pegs were reduced to small protrusions in some areas and were absent entirely in others. In the papillary part of the corium was a band of perivascular round cell infiltration. The blood vessels were dilated, the intima in some being edematous and in others proliferated to such an extent that the lumens were almost occluded. Except for a few melanoblasts, pigment was absent in the basal layer. A few chromatophores were visible in the subpapillary layer. Biopsy of one of the hyperpigmented lesions in the interscapular region revealed hyperkeratosis of the stratum corneum. The rete was slightly atrophic, the rete pegs being reduced in many places to small protrusions. Moderate perivascular round cell infiltration was visible in the papillary portion of the corium. The lymph spaces and the blood vessels were moderately dilated. The intima of the vessels showed slight edema, and in many capillaries proliferation of the intima was of a degree leading to almost complete occlusion. Pigment was present in the basal cell layer of the rete and in the stratum spinosum. Chromatophores and granules of free pigment were present in the subpapillary layer of the corium.

CASE 2—An obese Negro woman aged 51 entered the dermatologic department of Michael Reese Hospital on May 12, 1940 complaining of pains in the arms, hands and knees, edema of the ankles, dyspnea on exertion and severe pruritus of the palms and of the dorsal surfaces of the hands, including the fingers.

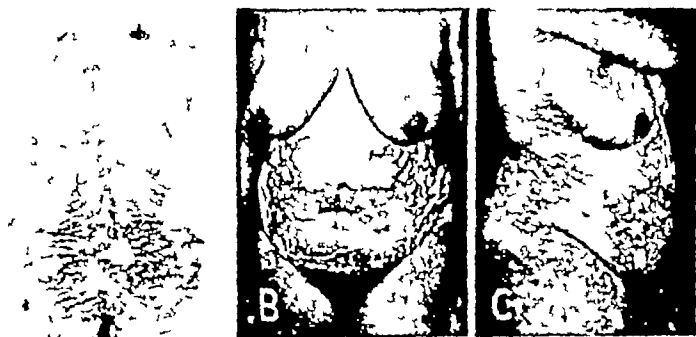


Fig. 1 (case 1)—Vitiligo lesions. A on lower lumbar, gluteal and sacral regions, B, with superimposed light brown areas of normal skin. C on the right side of the patient's body.

preparation. At the time my associates and I performed our inoculation experiments on animals we did not yet know that *T. carateum* is extremely susceptible to the action of the compounds of arsenic and of bismuth. It is impossible to demonstrate it in patients twenty-four hours after one injection of a bismuth or an arsenical compound.

REPORT OF CASES

CASE 1—A well nourished woman of 51 entered the dermatologic department of Michael Reese Hospital on Dec. 17, 1940 complaining of generalized pruritus and "white spots" on the skin.

She was born in St. Catharines, Ont., of mixed parentage, her father was Cherokee Indian and French and her mother Blackhawk Indian and Negro. At the age of 3 months she was taken to Pittsburgh, where she lived until 1939, when she moved to Chicago.

During the preceding six months she had been given two courses of treatment with bismuth salicylate, although a history of syphilitic infection had not been obtained.

At the time of admission to our clinic, in addition to the cutaneous lesions, the patient was suffering from severe asthma. There was no adenopathy.

On the malar eminences were cutaneous lesions in the form of peculiar bluish black, fairly sharply margined plaques about the size of a half-dollar (30 mm) and elevated about 2 mm. Numerous pinhead sized lesions of the same color and elevation but more sharply delimited were present in the imme-

The patient was born in Louisiana and lived there until 1939, when she moved to Chicago. In the preceding seven years she had had seven abortions each of which occurred spontaneously in the fourth month. She had received one course of treatment with neosarsphenamine and bismuth salicylate before entering our clinic.

In addition to obesity and the cutaneous lesions she had advanced dental caries and infectious arthritis. There was no adenopathy.

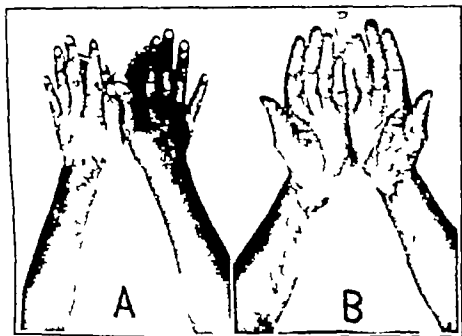


Fig 2 (case 2)—Deep black hyperpigmented plaque characteristic of *pinta*. A extending from the dorsal surface of the left wrist joint to involve half of the dorsal surface of the forearm. Depigmentation of the entire dorsal surface of the left hand and parts of the dorsal surface of the thumb and fifth finger of the right hand. B continuation of the plaque on the flexor surface of the left forearm. Characteristic triangular areas of leukoderma on the flexor surfaces of the wrists.

The skin on the dorsal surfaces of the left hand including the fingers, showed depigmentation which extended several inches above the wrist joint. Rests of normal black skin of various sizes and irregular outline were superimposed on the vitiliginous areas. These areas were rough and resembled the surface of a fine mesh nutmeg grater.

The depigmented area on the back of the left hand was sharply demarcated above the wrist joint by the lower border of a black plaque, 3 mm thick, which extended from the dorsal surface around to the flexor surface of the forearm to end several inches above the wrist in a vitiliginous area shaped like an inverted V. A deep black, sharply outlined plaque 3 mm thick extended upward from the depigmented area near the dorsal surface of the wrist, involved half of the extensor surface of the left forearm and wound around the middle of the forearm to end in a similar plaque which involved half of the flexor surface and was bounded distally by the V shaped vitiliginous area at the wrist.

The lesions on the palms were of two types, hyperkeratotic and macular. The hyperkeratotic lesions were black, slightly scaly, elevated and almost the size of a dime. The macular lesions were deep brown, about the size of a pea and sharply outlined. A partially depigmented area was present on the medial surface of the fifth finger of the right hand at the first metacarpophalangeal articulation. The lesion extended laterally and proximally for about an inch and wound around to the flexor surface of the forearm to end at the wrist in a vitiliginous area shaped like an inverted V. An identical area was present on the dorsal surface of the thumb at the first phalangeal articulation.

The patient stated that all of the depigmented areas had been preceded by plaques of the same color and thickness as those on the left forearm. These had been present for many years, hyperpigmentation had been noticed first in 1919 but depigmentation had not appeared until 1939.

When the patient was admitted to the clinic the Wassermann and Kahn reactions of the blood were strongly positive and they remained strongly positive until Dec 15 1942 in spite of continuous treatment with arsenical compounds given intravenously and bismuth compounds given intramuscularly. After that date they were consistently negative.

The cutaneous response to therapy was more rapid. The pruritus of the hands disappeared after a few injections of neosarsphenamine. After six weeks of therapy the roughness of the dorsal surfaces of the hands was replaced by superficial

atrophy. The black plaques on the left arm disappeared after three months of therapy and the hyperkeratotic and the macular lesions of the palms after two months.

Study of the spinal fluid and neurologic and cardiovascular examinations failed to reveal any pathologic changes. Ophthalmologic examination revealed corneal opacities, which were especially pronounced in the outer segments. Spirochetes could not be demonstrated by dark field examination, impregnation of the tissues with silver, study of stained smear preparations or inoculation experiments on animals. (The testes of rabbits were inoculated with tissue from the hyperpigmented and the depigmented lesions.)

Biopsy of a totally depigmented area at the left hypothenar eminence revealed a hyperkeratotic and definitely atrophic epidermis entirely without pigment. The pathologic changes in the corium were restricted to the pars papillaris and consisted of dilatation of the capillaries and lymph spaces, edema of the connective tissue and round cell infiltration of perivascular distribution. The reticular portion of the corium showed slight edema, and round cells were distributed between the connective tissue bundles. The capillaries and the larger and smaller vessels showed edema and desquamation of the intima. In some of the vessels intimal proliferation had advanced to such a degree that they were almost occluded.

Biopsy of a hyperpigmented patch on the flexor surface of the left forearm revealed pronounced hyperkeratosis with preservation of the stratum granulosum. The rete malpighii showed progressive atrophy, which in some areas was far advanced. Considerable round cell infiltration was present in the subpapillary portion of the corium which also showed advanced edema and destruction of the connective tissue bundles. The lymph spaces and blood vessels were dilated and edematous, and there was desquamation of the intima. The vessels in the reticular portion of the corium showed intimal proliferation of a degree sufficient to bring about almost complete occlusion of the lumens. The basal layer of the epidermis and the papillary portion of the corium were virtually packed with pigment in melanoblasts and chromatophores and with coarse granules lying between the connective tissue bundles.

CASE 3—An obese Negro aged 50 entered the dermatologic clinic of the Michael Reese Hospital on May 2 1939, referred

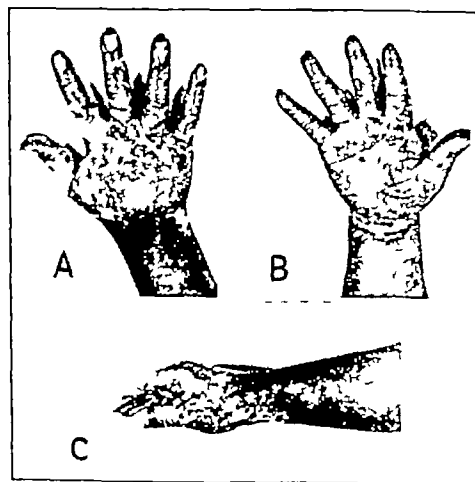


Fig 3 (case 3)—A vitiliginous lesions on the dorsal surface of the right hand including the fingers. B dyschromia of the palm and volar surfaces of the fingers of the right hand. Characteristic triangular area of leukoderma at the wrist. C dorsolateral view of the right hand showing continuation of the vitiliginous area to the forearm to end on the flexor surface in the characteristic triangular area of leukoderma.

from the surgical department because of positive serologic reactions and headache and vertigo of six months' duration.

The patient was born in Alabama and lived there until 1939 when he moved to Chicago. There was no history of syphilitic infection although the Wassermann and Kahn reactions of the blood were both strongly positive on a number of occasions. Adenopathy was not present.

The patient was referred for examination to the medical department, which reported enlargement of the aorta, accentuation of the second aortic sound and a systolic murmur at the apex. The blood pressure was 188 systolic and 114 diastolic. Neurologic examination and examination of the spinal fluid revealed no evidence of disease of the central nervous system.

On May 2 the clinician who first saw the patient observed a black, sharply outlined, dollar sized (38 mm) hyperpigmented patch 3 mm thick on the flexor surface of the right wrist, extending 1 cm into the palm. There was a juxta-articular node on the dorsal surface of the second phalangeal articulation of the fifth finger of the same hand. A second node was present in the suprapatellar region of the right leg. The patient stated that these nodes had been present for six years.

The patient had already received three courses of treatment with bismuth salicylate, and by the time we saw him, on May 9, 1940 the hyperpigmented patch at the wrist and the juxta-articular nodes had disappeared.

The dorsal surfaces of the right hand, including the fingers, had a mottled appearance resulting from contrast between irregularly outlined vitiligo patches and normal black skin. The depigmentation extended from the dorsal surface of the metacarpophalangeal articulation of the thumb and from the dorsomedial surface of the forearm to end in a V shaped ligoid area terminating several inches above the wrist joint.

The palm was studded with coal black, sharply outlined, hyperkeratotic, slightly scaly lesions about the size of a pea, with irregularly outlined depigmented areas and with irregularly outlined dark brown lesions ranging in size from that of a dime to that of a pea. When first seen the depigmented lesions on the dorsal surfaces of the hand, including the fingers, were of a peculiar pinkish color and so rough that they resembled a fine mesh nutmeg grater.

The patient in 1927 had first noticed black hyperpigmented areas on the fingers and hand at the sites where the vitiligo areas later appeared. The hyperpigmented patch on the flexor surface of the forearm was also present at that time. Depigmentation appeared in 1939. The hyperkeratotic lesions disappeared after three months of combined therapy with compounds of arsenic and bismuth, and the depigmented areas became perfectly smooth, ivory white and atrophic. On Nov. 20, 1941, the last time the patient visited the clinic, the Wassermann and Kahn reactions of the blood were still strongly positive.

Biopsy of a depigmented area on the flexor surface of the right wrist revealed pronounced hyperkeratosis, atrophy of the rete, absence of pigment in the epidermis and round cell infiltration which extended to the basal cell layer throughout the section and was especially prominent in the papillary layer of the corium. The small capillaries in the infiltrated portion of the papillary layer were dilated, and their intima showed desquamation. The intima of the larger capillaries in the papillary layer and of the vessels throughout the reticular layer of the corium showed proliferative changes. In many instances these were so extensive that the lumens of some vessels were materially narrowed and of others occluded.

On Aug. 8, 1942 the patient was admitted to the medical service of Michael Reese Hospital acutely ill. The clinical diagnosis was arteriosclerotic heart disease, malignant nephrosclerosis and uremia, and he died on August 24. Dr. Otto Saphir, who performed the autopsy, failed to find any evidence of syphilis but reported general arteriosclerosis, old pyelonephritis in arteriosclerotic kidneys, hypertrophy and dilatation of the heart, chronic passive hyperemia of the lungs, liver, kidneys and spleen, bilateral bronchopneumonia of the lower lobes, a small aneurysm of the right coronary artery and old bilateral fibrous pleuritis.

All 3 patients maintained that they had never had sexual relations or shared living quarters with persons who had lived in the tropics or who had had lesions resembling theirs.

104 South Michigan Avenue

THE CONTROL OF AN OUTBREAK OF BACILLARY DYSENTERY WITH SULFONAMIDES

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Bacillary dysentery continues to be a problem in crowded institutions, army camps and orphanages. The difficulty of control has been pointed out by many authors.¹ In former years treatment of the cases was purely symptomatic and control of the infection could be obtained only by isolation and quarantine or by permitting the outbreak to run its course after it had attacked a large percentage of the susceptible. Since the introduction of the sulfonamides, favorable reports of treatment of cases of bacillary dysentery with these drugs have appeared in the literature.² Of late the less soluble drugs, particularly sulfaguanidine and succinylsulfathiazole, have had a considerable vogue. Theo-

TABLE 1—Cases and Carriers According to Location in the Building

Floor	Population			Oases		Carriers	Cases and Carriers with Positive Stool Cultures
	Boys	Girls	Age	Stools Positive	Stools Negative		
Second	10	14	1½-4	10	14	0	10
Third	0	49	5-11	3	1	17	20
Fourth	40	0	5-11	8	1	20	28
Fifth	32	0	4-7	12	1	13	26
Total	82	63		33	17		
	145			50		50	83

retically there should be an advantage in the use of these drugs, since the concentration of the drug in the intestinal tract is higher than with the more readily absorbable ones.

OUTBREAK

We had an opportunity recently to test the value of the sulfonamides in the control of an outbreak of bacillary dysentery, Sonne type. The outbreak occurred in an orphan asylum housed in a well constructed five story building. There was a total of 145 white children being cared for in the building at the time of the investigation, and these were divided into four groups, one each on the second, third, fourth and fifth floors. While the children are kept in their respective quarters they visit one another, eat together in the dining room and mingle at play and school. Some of the children

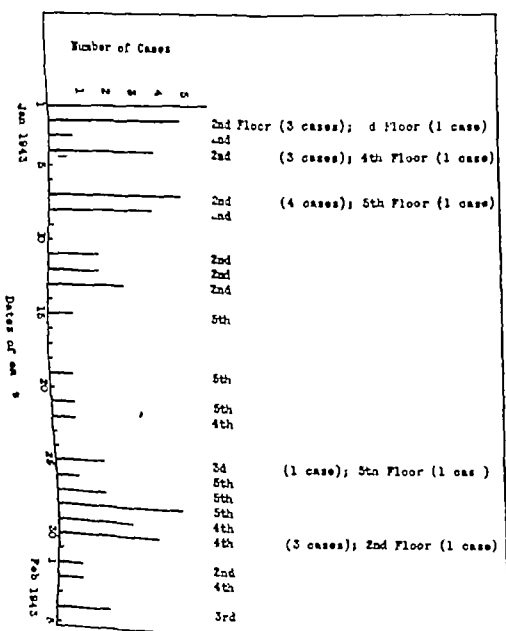
From the Israel Orphan Asylum, New York City.
Dr. Morris Greenberg, epidemiologist of the New York City Department of Health, gave assistance and counsel. All the laboratory work was performed for us in the enteric fever laboratory of the New York City Department of Health and Miss Carolyn Oldenbush rendered assistance. Miss Charlotte Rosenzweig, nurse in charge at the Israel Orphan Asylum, was cooperative and helpful.

1. Cruickshank, Robert, and Swyer, Robert. Outbreak of Sonne Dysentery, *Lancet* 2, 803-805 (Dec. 28) 1940. Smyth C. J., Finkelstein M. B., Gould, S. E., Koppa T. M. and Leeder F. S. Acute Bacillary Dysentery (Flexner). Treatment with Sulfaguanidine and Succinylsulfathiazole. *J. A. M. A.* 121, 1325-1330 (April 24) 1943. Roberts T. L. and Daniels, W. B. Succinylsulfathiazole in the Treatment of Bacillary Dysentery, *J. A. M. A.* 122, 651-653 (July 3) 1943.
2. Abente Haedo F. and Rodriguez Devincenzi A. Sulfonamide Compounds in Bacillary Dysentery. *Arch. urg. de med. cir. y especialid.* 21, 115-127 (Aug.) 1942. Marshall, E. K. Jr. Bratton A. C. Edwards, Lydia B. and Walker, Ethel. Sulfanilylguanidine in Treatment of Acute Bacillary Dysentery in Children. *Bull. Johns Hopkins Hosp.* 68, 94-111 (Jan.) 1941. Paulley J. W. Treatment of Bacillary Dysentery in Middle East. *Lancet* 2, 592-594 (Nov. 21) 1942. Smyth Finkelstein Gould Koppa and Leeder.

receive instruction in the building, others, the older ones, attend a public school across the street. There were no cases of diarrhea or dysentery in this public school.

On Dec 16, 1942 S. H., a boy aged 11, of the fourth floor group, who had been in the institution since 1939, became ill with diarrhea which persisted for about three days. No cultures of his stool were made. On Jan 4, 1943 this child again became ill with vomiting, fever and diarrhea. A stool specimen was submitted to a private laboratory on January 8 and was reported as positive for dysentery bacilli.

On January 2, 4 children on the second floor became ill with symptoms of vomiting, fever and diarrhea. They had been in the institution for at least three months. Other children on this floor developed similar symptoms, and by January 13 all the 24 children on this floor had become ill. The disease spread to the other floors. On January 2 a case occurred on the



Cases by dates of onset and location in building

third floor and 3 other children later became ill on this floor. From January 4 to February 2, 9 cases occurred on the fourth floor, and from January 15 to January 28 12 cases developed on the fifth floor. A total of 50 children became ill between January 2 and February 4. The onsets are shown in the chart.

An investigation was begun toward the end of January. All new admissions were discontinued. The sick children were isolated, and stool specimens were obtained from all children in the institution as well as from all adults employed there. At least 3 specimens were cultured from each child. Those with positive specimens were not released until three successive specimens taken not less than forty-eight hours apart were reported as negative by the laboratory. A final survey was made of all the children by cultures inoculated directly from a rectal smear, before the institution was permitted to reopen.

Table 1 shows the distribution of the cases in the institution, as well as the results of the culture survey. It will be noted from the table that there were 33 boys and 17 girls affected and that 33 of the 50 children or 66 per cent had *Bacterium sonnei* in their stools.

Bacteriologic Examination—Stool specimens were received in the laboratory in paper containers on the same morning that they were passed, usually within one to three hours. They were plated with a heavy inoculum on SS agar and streakings were also made on plates of MacConkey and bismuth sulfite. Bismuth

TABLE 2—Treatment of Bacteriologically Positive Cases and Carriers According to Drug Administered

Floor	Sulfa thiazole	Sulfa diazine	Sulfa guanidine	Succinyl sulfa thiazole	Total
Second	10				10
Third		11	0		11
Fourth	11	2	0	0	13
Fifth			4	21	25
Total	21	1	22	21	65

sulfite plates were examined after incubation for forty-eight hours. MacConkey and SS agar plates were examined after incubation for twenty to twenty-four hours and suspected colonies fished on to Krumwiede's triple sugar medium and incubated for sixteen to twenty hours. Colonies giving *Shigella* reactions were fished and tested with type specific antisera. Inoculations into sugar tubes were made only at the beginning of the study. Later cultures were classified by means of agglutination reactions with type specific antisera only.

A total of 715 cultures were made from the 145 children. None of the specimens from the adults were positive, and they are therefore omitted from consideration in this study. Specimens from 83 children were positive for *B. sonnei*. Of these, 33 were from children who were ill or had recently recovered, and 50 were from symptomless carriers. Their distribution in the building is shown in table 1.

An attempt was made at first to isolate all children with positive stools as they were discovered. However, facilities were lacking for the isolation of so many and it was therefore decided to use the sulfonamides in an attempt to control the outbreak. Four of the sulfonamides were employed: sulfathiazole and sulfa-

TABLE 3—Bacteriologically Positive Children Not Cleared After One Course of Treatment

Name	Date of Positive Stool Before Administration of Drug	Drug Administered and Number of Days	Date of Positive Stool After Administration of Drug	Further Treatment
J. G.	2/2	Sulfathiazole 6	2/24	Sulfaguanidine 2/20-28
H. B.	2/4	Sulfathiazole 4	2/22	Sulfadiazine 2/24-27
M. S.	2/4	Sulfathiazole 4	2/22	Sulfadiazine 2/24-27
F. W.	2/4	Sulfaguanidine 4	2/22	Sulfadiazine 2/24-27
J. S.	2/12	Sulfaguanidine 4	2/18	Succinylsulfa 2/20-28
R. G.	1/20	Succinylsulfa 0	2/22	Sulfathiazole 2/24-27
R. P.	2/1	Succinylsulfa 0	2/24	Sulfadiazine 2/27-27
L. W.	2/24	Sulfadiazine 3	3/1	Sulfathiazole 3/4-7
	2/1	Sulfaguanidine 0	2/10	Sulfadiazine 2/17-20
	2/10	Sulfadiazine 3	3/1	Sulfathiazole 3/4-7

diazine in doses of 1 grain per pound of body weight, and sulfaguanidine and succinylsulfathiazole in doses of 2 grains per pound of body weight. The drugs were administered to all children with positive stools. No selection was made in the children treated with the different sulfonamides. The nurse was instructed to give the four drugs in rotation to numerically equal groups of patients. This was fairly well carried out except that sulfadiazine was given to a smaller than

average group, as is indicated in table 2. The children were kept on the drugs for an average of four days. Some received it for only three days and others for as long as six days. Of the 83 cases and carriers all but 8 failed to show *B. sonnei* in their stools following treatment. Of the 8 whose stools were positive after treatment, 3 had received sulfathiazole, 3 sulfaguanidine and 2 succinylsulfathiazole. All were again treated with a different sulfonamide, 6 cleared up while 2 required a third course of treatment (table 3).

Clinical Findings—The cases were mild and no deaths occurred. Diarrhea lasted between two and four days. The stools contained mucus and blood. Temperatures in most cases ranged between 100 and 101 F, but in a few cases the temperature at onset was between 103 and 104 F. Abdominal cramps and vomiting occurred during the first twenty-four hours only. Blood counts were done on all patients and varied between 7,500 and 10,000 white blood cells per cubic millimeter. The polymorphonuclear leukocytes ranged between 65 and 72 per cent. Urine specimens were all normal.

All children were followed with frequent blood counts and urine examinations while receiving the drugs. No blood was found in any of the urinary specimens, and no significant reductions in the number of red and white blood cells or in the percentage of granular blood cells. Two children developed a red macular rash, one after four days of treatment with sulfathiazole, and the other after three days of sulfadiazine administration. The rash disappeared within twenty-four hours after the drug was discontinued.

COMMENT

The sulfonamides appeared to be quite effective in the control of the outbreak. In the dosages and for the periods given no advantages could be claimed for one over the other of the four drugs used. As noted, sulfathiazole and sulfaguanidine failed in 3 cases, each used respectively for six, four and four consecutive days, and succinylsulfathiazole failed in 2 cases in which it was given for four days. Sulfadiazine failed in 2 cases in which it was substituted for a period of three days for another drug which had failed (table 3).

An interesting feature of the bacteriologic examinations was the total inhibition of growth of all intestinal organisms on the mediums used, as a result of the administration of the sulfonamides. This occurred in 80 per cent of all children treated with sulfathiazole, 70 per cent of those treated with sulfadiazine, 63 per cent of those treated with succinylsulfathiazole and 36 per cent of all treated with sulfaguanidine. We are unable to say how soon after administration of the drug growth was inhibited or how long the inhibition lasted, since we did not take daily cultures. Some idea may be obtained, however, from the following examples:

1 Five children had positive stool cultures on February 2. Sulfathiazole was administered from February 4 to February 10. Stool cultures on February 8, 11 and 15 gave no growth. On February 24 stool cultures gave growths of *Escherichia coli*.

2 A child's stool was positive on February 5. He was treated with sulfadiazine from February 7 to February 10. Stool cultures on February 11 and 15 gave no growth. Stool culture on February 24 gave a growth of *E. coli*.

3 A positive culture was obtained from a child's stool on February 4. He was treated with succinylsulfathiazole from February 6 to February 10. On February 11 the culture of the stool gave no growth. On February 15 there was a growth of *E. coli*.

4 A child's stool was positive on February 22. She received sulfaguanidine from February 24 to February 27. Stool cultures on March 1 and March 8 gave no growth. On March 10 a stool culture gave a growth of *E. coli*.

SUMMARY

1 An outbreak of Sonne dysentery involving 50 children occurred in an orphanage with a total census of 145. Bacteriologic survey disclosed 83 children with positive stool cultures.

2 The administration of sulfathiazole and sulfadiazine in doses of 1 gram and sulfaguanidine and succinylsulfathiazole in doses of 2 grams per pound of body weight for an average of four days cleared 90 per cent of the children with positive stools. The remaining 10 per cent were cleared with one or two additional courses of treatment.

3 The administration of the drugs caused complete inhibition of growth of intestinal bacteria for a time in 80 per cent of all children treated with sulfathiazole, 70 per cent of those treated with sulfadiazine, 63 per cent of those treated with succinylsulfathiazole and 37 per cent of all treated with sulfaguanidine.

15 West Eighty-First Street—317 East Seventeenth Street

Clinical Notes, Suggestions and New Instruments

COLD AUTOHEMAGGLUTININS FOLLOWING ATYPICAL PNEUMONIA PRODUCING THE CLINICAL PICTURE OF ACROCYANOSIS

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ARMY OF THE UNITED STATES
AND

LIEUTENANT EDWARD D. FREIS, MEDICAL CORPS,
ARMY OF THE UNITED STATES

The phenomenon of autoagglutination and autohemolysis has often been described in paroxysmal hemoglobinuria, which is sometimes encountered in congenital syphilis. In 1937 McCombs and McElroy¹ in a review of the available literature reported that autoagglutination had been observed in hemolytic icterus, trypanosomiasis,² severe anemias and liver disease, occasionally in pneumonia and also in apparently normal persons. It has likewise been reported in cases of hemolytic anemia associated with sulfanilamide therapy³ and acute hemolytic anemia due to lead poisoning.⁴ Wiener⁵ in his recently revised book on "Blood Groups and Transfusions" expressed the thought that the phenomenon must not be too rare because he himself had observed at least a dozen instances of autoagglutination occurring at room temperature.

In February 1943 Peterson, Ham and Finland⁶ reported finding a high incidence of cold agglutinins (autohemagglutinins) which appeared at low temperatures in the blood serum of patients with primary atypical pneumonia. In this report they suggested that the demonstration of cold agglutinins might possibly serve as a useful test for such atypical pneumonias.

Since atypical pneumonia has been prevalent in the armed forces during the past winter and, owing to the fact that we

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¹ McCombs, R. P. and McElroy, J. S. Reversible Autohemagglutination with Peripheral Vascular Symptoms, *Arch. Int. Med.* 59: 107-11 (Jan.) 1937.

² York, W. Autoagglutination of Red Blood Cells in Trypanosomiasis, *Ann. Trop. Med. & Parasitol.* 4: 529-552, 1910.

³ Antopol, William, Applebaum, Irving and Goldman, Lester, cited by Reisner, E. H. Jr., and Kalkstein, Menachem. *Am. J. M. Sc.* 207: 313-322 (March) 1942.

⁴ Gray, Irving, Greenfield, Irving, and Federer, Max, cited by Reisner and Kalkstein.

⁵ Wiener, A. S. *Blood Groups and Transfusion*. Springfield, Ill. Charles C. Thomas, Publisher, 1943.

⁶ Peterson, O. L., Ham, T. H. and Finland, Maxwell. Cold Agglutinins (Autohemagglutinins) in Primary Atypical Pneumonia. *Sci.* 97: 167-168 (Feb. 12) 1943.

have recently observed a striking instance in which autoagglutinins were active even at room temperature and produced vascular changes suggesting the clinical picture of acrocyanosis, it seemed worth while to report the following case

REPORT OF CASE

Corporal T, aged 38, was seen in the outpatient clinic of the Station Hospital because his barrack mates observed that his nose, ears, and hands were a deep purple (fig 1). He himself discovered that this phenomenon occurred only after he was exposed to cold.

He had suffered with a respiratory infection in March 1943, at which time a large number of patients with atypical pneumonia were being hospitalized at this air base. He was quite sick for about three days with cough and fever and did not recover from the cough and generalized malaise for about two weeks. The vascular phenomenon previously mentioned appeared for the first time, to his knowledge, about one month after the original onset of his symptoms. This soldier is much above the average in intelligence, and his statement, therefore, that this was the first time he had ever noted this condition

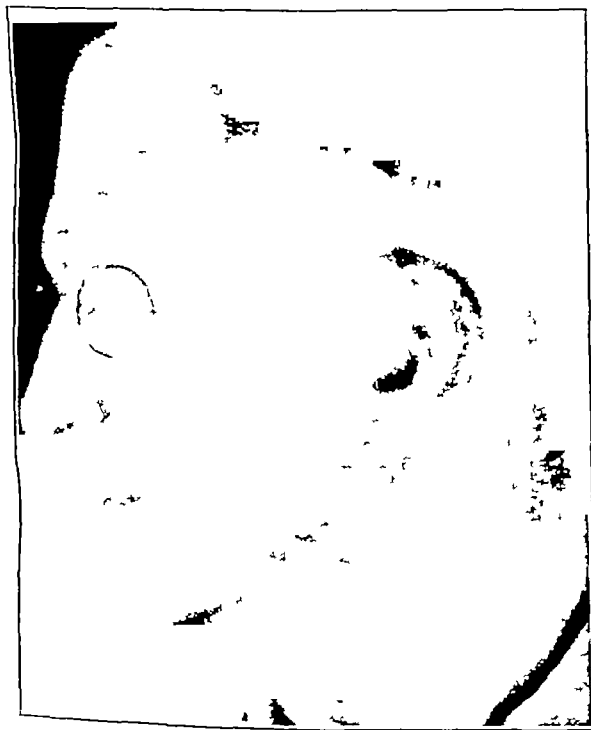


Fig 1—Patient after exposure to cold showing cyanotic discoloration of face and outer edge of auricular cartilage.

seemed credible. No other member of his family was similarly affected. Prior to entering the armed services he was an accountant, and his military duties have been entirely clerical.

The clinical picture of acrocyanosis could be reproduced at will by exposing him to cold. After he returned to room temperature about fifteen minutes was required for the abnormal discoloration to disappear.

Capillaroscopy was made of the nailfolds of the patient's fingers. It was found that the capillaries reacted more or less normally to considerable variations in temperature, except for moderate ballooning of the summit of the loops when the hand was cyanotic. Not all capillaries in the field showed the latter phenomenon, and it was interpreted as being due to reversible intravascular autoagglutination. Thermocouple readings of hand skin temperatures before, during and after chilling varied but slightly from similar readings on normal controls. When an attempt was made to do a routine red cell count on the patient with the diluting fluid at room temperature, prompt agglutination of massive character took place in the hemocytometer pipet. However, when the diluting fluid was warmed a little above body temperature the agglutination was found to be completely reversible and a smooth even suspension of red

cells was obtained. Moreover, prompt agglutination could be produced again and again in hanging drop suspensions by repeated warming and chilling. The patient's blood was of group O. When the serum was separated from the clot it had the property of agglutinating not only the patient's own washed red cells but also the washed cells of normal group O



Fig 2—Section under high power magnification showing patient's washed red cells and serum after warming. Hanging drop preparation. No agglutination.

persons (figs 2, 3 and 4). After repeated chilling of the patient on numerous occasions, no hemoglobin was found at any time in his urine. Furthermore, the "acid hemolysis test" ⁷ for exclusion of paroxysmal hemoglobinuria was entirely negative. The complete "acid hemolysis test" as described by Ham was carried out with the patient's red cells and the red cells of a known normal control with identical results.

Protein determinations showed a total serum protein of 6.4 per cent, albumin 4.9 per cent and globulin 1.5 per cent. The autoagglutinins were readily absorbable by the patient's own red cells and by red cells of normal group O persons. The autoagglutinins were active in dilutions up to 1:5,000. Moreover, these autoagglutinins could be recovered in saline solution from the washed agglutinated red cell masses and were found to be active again for group O red cells.

A careful physical examination and other laboratory studies for liver diseases, syphilis and other conditions in which cold agglutinins have previously been described were entirely negative. His blood picture was normal, and the only blood abnor-



Fig 3—Section under high power magnification showing agglutination of patient's washed red cells by his own serum after cooling. Hanging drop preparation.

malities that we could discover were the presence of these so-called cold autohemagglutinins, which were present even at room temperature, and an extraordinary rapid sedimentation rate when the cell suspension was placed in the ice box whereas the rate was normal when the suspensions were warmed.

⁷ Ham T H. Personal communication to the authors.

COMMENT AND CONCLUSIONS

We believe that when the patient was chilled the autohemagglutinins in his blood serum produced reversible intravascular agglutination. We further believe that this intravascular agglutination, rather than an underlying structural or neurogenic vascular disease, produced the clinical picture of acrocyanosis.

Although cases exhibiting Raynaud-like phenomena associated with reversible autohemagglutination and paroxysmal hemoglobinuria have been described by McCombs and McElroy,¹ by Ernstene and Gardner,² by Wiener³ and by others, our case is unique in that there is no associated paroxysmal hemoglobinuria, a negative Donath-Landsteiner test and a negative Ham test for acid hemolysis. Davidsohn⁴ studied a patient with a condition resembling Raynaud's disease whose serum agglutinated her own cells at ice box temperature and at 22 C. Davidsohn does not mention whether this patient had paroxysmal hemoglobinuria or a positive Donath-Landsteiner test; unfortunately, we have been unable to obtain any further information on this point. Peterson, Ham and Finland⁵ mentioned phlebotrombosis and pulmonary emboli complicating a few of their

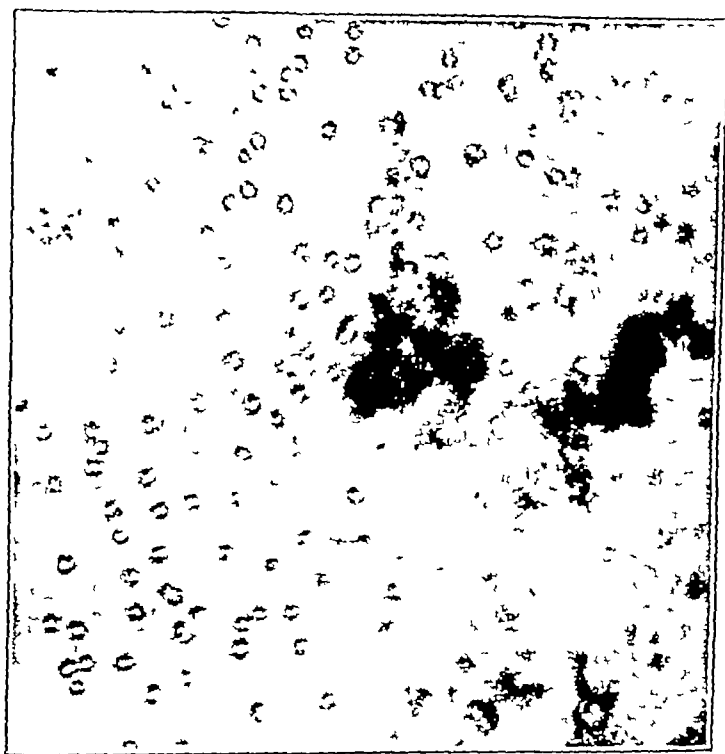


Fig 4—Section under high power magnification demonstrating agglutination with patient's serum and washed red cells of a normal person of the same blood type. Chilled hanging drop preparation.

cases of virus pneumonia associated with autohemagglutinins but they noted no examples of vascular phenomena similar to those in this case.

With the possible exception of the case reported by Davidsohn,⁴ the clinical picture of acrocyanosis has not to our knowledge been described before in connection with the isolated phenomenon of autohemagglutinins without autohemolysins. It may be that, with the higher incidence of atypical pneumonia producing autohemagglutinins, more cases will be observed. In conclusion, one cannot help but wonder whether one of the reasons for the wide variation in the descriptions of the underlying structural, pathologic vascular changes recorded for acrocyanosis might not have had as their basis the fact that no true underlying pathologic condition existed aside from the possible presence of autohemagglutinins, which had not been observed or whose presence had not been properly interpreted. Moreover, the possible hazard in using convalescent blood plasma or serum from persons who have recovered from atypical pneumonia should be in mind.

THE RELIEF OF ACUTE PLEURITIC PAIN BY
INTERCOSTAL NERVE BLOCK

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Pain of pleural origin causes the physician great concern in the treatment of pneumonia and pulmonary infarction. It is often persistent, agonizing and exhausting. The rapid, shallow respiration which results from it does not aerate the lungs sufficiently and may promote atelectasis. Furthermore, it is the pain itself which brings the patient to the physician. Rapid relief of this pain gives the patient great confidence in the doctor. The variety of procedures suggested for the relief of pleural pain has emphasized the obstinacy of the problem. Counterirritation, adhesive strapping, the use of opiates, artificial pneumothorax and local injection of the pleura and subcutaneous tissues with procaine hydrochloride each has had its advocates.

My purpose in this report is to describe a procedure of relieving pleural pain by inducing intercostal nerve block with procaine hydrochloride. This method is simple and effective, often producing permanent relief of the pleural pain associated with pneumonia. It allows relatively free motion of the thoracic wall and so favors adequate aeration of the lungs, affording protection against the complication of atelectasis. Drainage of the involved area of the lung is promoted for coughing is rendered nearly painless. This is an added advantage in the occasional patient from whom it is difficult to secure a specimen of sputum. Cumbersome chest binders and adhesive tape are avoided.

METHOD

The nerves to be injected are those corresponding to the intercostal spaces over which definite tenderness can be elicited by slight pressure. The injection is made most conveniently in the posterior axillary line or anterior to this. However, in instances in which the hyperesthesia is located more posteriorly, injection can be made in the midscapular line. A procaine hydrochloride wheal is first made in the overlying skin. A 20 to 21 gage needle is then introduced through the anesthetized area of skin until contact is made with the outer border of the rib immediately above the selected space. The periosteum is anesthetized with a few minims of procaine hydrochloride, after which the needle point is carried down to the inferior margin of the rib, where it falls into the groove occupied by the intercostal nerve and vessels. At this point traction is exerted on the plunger until the operator is certain that the needle has not entered a vessel. If no blood is drawn the nerve is then infiltrated with 2 cc of a 1 per cent solution of procaine hydrochloride.

REPORT OF CASES

CASE 1—A white man aged 38 was admitted to the hospital with pneumococcal pneumonia of five days duration. A sharp radiating pain had been present in the right lower quadrant of the chest for seventy-two hours. There was a pronounced increase in the respiratory rate as well as an inability to cough deeply. Infiltration of the fourth, fifth and sixth right intercostal nerves gave prompt and complete relief of pain without recurrence. Shortly after the injection was completed the patient fell asleep, this being his first rest since the onset of the pain.

CASE 2—A white man aged 60 with pneumonia involving the lower lobe of the right lung and associated severe pleuritic pain had the fifth and sixth right intercostal nerves blocked. There was cessation of pain with permanent relief and the patient was able to sleep.

CASE 3—A white man aged 66 with perforated peptic ulcer and right subdiaphragmatic abscess complicated by pneumonia involving the lower lobe of the right lung had severe pleural pain over the right lower lateral and anterior thoracic wall. There were hyperesthesia and muscular spasm over the right upper abdominal quadrant and pain on respiration in this region. Intercostal block of the lower six thoracic nerves on the right promptly relieved the thoracic pain and the abdominal pain that was produced by respiration, but abdominal tenderness and spasm persisted.

¹ Ernstene, A. C., and Gardner, W. J. The Effect on Splanchnic Nerve Resection and Sympathetic Ganglionectomy in a Case of Paroxysmal Hemoglobinuria. *J. Clin. Investigation* 14: 799-805 (Nov.) 1937.
² Davidsohn, Israel. Irregular Isoagglutinins. *J. A. M. A.* 120: 1288-1292 (Dec. 19) 1942.

From the Medical Service of the Grady Hospital and the Department of Medicine, Emory University School of Medicine.

CASE 4—A Negro man aged 63 had extremely severe right-sided pleural pain with limitation of respiration, resulting from an infarct of the lower lobe of the right lung. Pain and hyperesthesia extended down over the abdomen as far as the inguinal ligament. Procaine block of the lower six intercostal nerves on the right brought immediate complete and permanent relief of the pain.

CASE 5—A Negro man aged 35, after seven days of complete consolidation of the right lung, developed severe pleuritic pain over the anterior and lateral right thoracic wall. The pain radiated to the umbilicus and over the right upper abdominal quadrant. Intercostal block of the right fourth, fifth, seventh and eighth nerves relieved the pain permanently.

CASE 6—A Negro man aged 20 with atypical pneumonia had intense right-sided pleurisy of eighteen hours' duration. Injection of the seventh and eighth right intercostal nerves gave complete and permanent relief.

CASE 7—A Negro man aged 25 with atypical pneumonia, atelectasis of the lower lobe of the right lung, displacement of the mediastinum, pronounced increase in respiratory rate and a moderate degree of cyanosis had for twenty-four hours complained of severe pleuritic pain occurring laterally and anteriorly over both walls of the chest. Bilateral intercostal block of the ninth, tenth and eleventh nerves produced immediate relief with clearing of the cyanosis and a sharp drop in the respiratory rate. Eighteen hours later the pain recurred on the left, but prompt reinjection of the nerves abolished his symptoms permanently.

CASE 8—A Negro woman aged 24 complained bitterly of pleuritic pain associated with pneumonia involving the lower lobe of the right lung. The pain had been intense for thirty-six hours. Infiltration of the seventh, eighth and ninth right intercostal nerves caused immediate cessation of pain, and the patient was able to sleep.

CASE 9—A Negro man aged 27 entered the hospital with severe bilateral pain in the chest, aggravated by coughing on deep inspiration. He had pneumonia of the lower lobe of the right lung and pleurisy on the left, as evidenced by an audible friction rub. Accompanying the process there was a definite increase in respiratory rate. The patient was unable to raise any sputum. The ninth, tenth and eleventh intercostal nerves were blocked bilaterally with complete and permanent relief of pain, a drop in the respiratory rate and definite mental changes, as shown by lack of anxiety and the ability to sleep. After the block the patient was able to cough without pain and a specimen of sputum was easily obtained.

CASE 10—A Negro youth aged 15 was admitted to the hospital with pneumonia of the middle and lower lobes of the right lung. Eight hours prior to admission he had severe pleuritic pain. Immediately on admission to the hospital block of the right eighth and ninth intercostal nerves gave immediate and permanent relief of pain.

CASE 11—A Negro man aged 30 had pneumonia involving the lower lobe of the left lung, accompanied by severe pleuritic pain, hyperesthesia over a wide area, increased respiratory rate and inability to cough. Procaine block of the lower seven intercostal nerves on the left reduced the respiratory rate, abolished the pain and hyperesthesia, and rendered coughing less painful. This made it possible for the patient to obtain rest and sleep, which had not been accomplished since onset of the pneumonia.

CASE 12—A Negro youth aged 17 with pneumonia involving the lower lobe of the right lung and associated pleural pain of severe nature had the right seventh, eighth, ninth and tenth intercostal nerves blocked, with immediate and complete relief of the pleural pain.

CASE 13—A Negro man aged 39 with pneumonia of the middle and lower lobes of the right lung and agonizing pleural pain of fourteen hours' duration had the right sixth intercostal nerve blocked, with relief of pain for about ten minutes. The pain recurred over the lower three nerves which were again injected. There was complete disappearance of the pain. Twenty

minutes later the pain recurred but was of much less severity than on previous occasions. At this point the patient was given morphine sulfate $\frac{1}{8}$ grain (0.011 Gm.) and in a short time was asleep. There was no recurrence of the pain after the patient awakened.

CASE 14—A Negro woman aged 49 entered the hospital with pneumonia of the middle and lower lobes of the right lung and pleuritic pain of eight hours' duration. Injection of the right seventh, eighth and ninth intercostal nerves produced immediate and permanent relief of the pain.

COMMENT

Thirteen patients who had pneumonia and a fourteenth who had pulmonary infarction were suffering with severe lancinating pleural pain aggravated by cough and deep inspiration. All but 3 of those with pneumonia had audible friction rubs. The respiratory rate was definitely increased. Six patients had pain referred to an upper abdominal quadrant and the periumbilical region. In the patient with pulmonary infarction the pain extended 2 fingerbreadths below the inguinal ligament. The pain of each of these patients was relieved by intercostal nerve block within five to ten minutes after the injection was completed. Pain recurred in only 2 patients. In the first the pain returned eighteen hours after the initial block. Reinjection of the nerves produced permanent and complete relief from the pain. In the second the pain reappeared ten minutes after the first injection. Reinfiltration of the nerves provided complete relief for twenty minutes, but the pain again recurred in about one half of the area supplied by the blocked nerves. The patient was given morphine $\frac{1}{8}$ grain (0.011 Gm.), shortly after which he fell asleep and the pain did not recur on awakening. The majority of the patients had considerable tachypnea, and in these the character of respiration was materially altered following intercostal block. It became deeper, slower and more regular, with obliteration of the respiratory grunt.

The immediate relief of the pain after procaine block was to be expected. However, the prolonged disappearance of the pain came as a distinct surprise. At first it was thought to be a mere coincidence, but later it became clear that prolonged relief of pleural pain was the usual result of intercostal nerve block. The anesthetic effect of the procaine lasted only a short time. Therefore, prolonged anesthesia could not account for the permanent disappearance of the pain. The increase in depth of respiration was striking in all cases as soon as the pain was completely abolished, and it may be that the increased motion of the parietal pleura was in some way connected with the permanent relief of pain. Recent studies have demonstrated that prolonged relief of pain from a sprained ankle may result from the combination of local anesthesia and motion.¹ As in the case of pleural pain, the disappearance of pain in the ankle persists long after the anesthetic effect of the procaine has worn off.

Other authors have injected procaine hydrochloride for relief of pleural pain. Weiss and Davis² recommended subcutaneous infiltration of the hyperesthetic skin. Schmur³ advised local infiltration of the pleura. Both of these methods are successful if the area of hyperesthesia is well localized, but they are not practical when the pain is widespread. The method of intercostal block described here has proved infinitely more simple and time saving for me.

SUMMARY

In a series of 14 consecutive cases, severe pleural pain was relieved effectively by intercostal nerve block. The resultant improvement in the general condition of the patients was striking. Anxiety disappeared, and most patients fell asleep shortly after the procedure was completed. For some this was the first rest in many hours.

50 Armstrong Street

1 McMaster, Paul E. Treatment of Ankle Sprain. Observations in More Than Five Hundred Cases. *J. A. M. A.* 122:659 (July) 1943.

2 Weiss, Soma and Davis, David. The Significance of the Afferent Impulses from the Skin in the Mechanism of Visceral Pain. *Am. J. M. Sc.* 176:517 (Oct.) 1928.

3 Schmur, Sidney. Deep Injection of Novocaine for the Relief of Pleural Pain. *Ann. Int. Med.* 13:845 (July) 1939.

UNIVERSAL O BLOOD TRANSFUSION COMBINATION OF POOLED PLASMA AND O CELLS

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Metropolitan Hospital

The importance of blood grouping, first demonstrated by Landsteiner, opened the way for transfusion as a safe therapeutic measure. By cross matching, the occasional reactions due to incompatibility of bloods were obviated.

The use of universal blood donors was first described by Ottenberg¹ in 1911. Since then, especially because of objections raised by Coca,² Hesse³ and others,⁴ the indiscriminate use of the universal donor has been condemned by many. The presence of agglutinins in a titer higher than 1:16 is considered unsafe. The serum of the universal donor has an increased titer in 3 per cent of donors according to Coca and in a larger percentage according to Hesse (a titer of 1:32 or over in 42 per cent against A cells and 32 per cent against B cells). The desire to curb the indiscriminate use of the universal donor has resulted in a sanitary code regulation in New York State, January, 1941, prohibiting the use of universal O donors unless the isoagglutinins are of low titer by actual titration. Witelsky, Klendshoj and Swanson⁵ suggested that isoagglutinins anti A and anti B may be neutralized by the addition of their homologous antigens to O blood in order to make it safer for universal donor transfusions. On the other hand many, including Rosenthal and Vogel⁶ in a series of 819 cases, found no higher incidence of reactions than with homologous blood. However, universal donors were used only in urgent cases, and cross matching was usually done.

In order to overcome the reactions from this type transfusion, it has occurred to me that the use of pooled plasma with O cells would constitute a safer universal blood. Since O cells contain no agglutinogens nothing is to be feared from their use, provided proper typing is performed. Again since the incidence of reactions from pooled plasma has been minimal (about 1 per cent), one may dismiss plasma as a source of unusual reactions. The combination of O cells with pooled plasma should make the ideal universal blood.

Obviously this procedure applies only to institutions with blood banks. On collection, after typing and Kahn testing the bloods are centrifuged. Plasma is pooled from at least eight donors. Either the freshly pooled plasma can be added to the cells of type O (or other types if large pools are obtained), or stored, banked pooled plasma, the titer of which has been determined, may be added to the cells. The pooling diminishes the titer of the isoagglutinins mainly by dilution and to some extent also through neutralization of the isoagglutinins by group substances in solution. In either event there is no waste of red cells, since they are conserved with or in pooled plasma. In this way no typing of the recipient or cross matching would be necessary at any time when this combination of O cells and pooled plasma is used.

If the bank has sufficient donations of O cells these may be used with pooled plasma for whole blood transfusions or the cells may be used in saline or dextrose suspensions. Likewise the A, B and AB cells may be used if necessary in their respective blood groups if there is an insufficient supply of

O cells. Additional O cells may be obtained from the blood cross centers. At the expiration of the allotted time—seventy-two hours by some groups or seven to ten days or longer by others—the unused blood will yield pooled plasma for further use.

SUMMARY

The combination of O cells with pooled plasma constitutes an ideal and safer and economical medium of universal blood, because of dilution of agglutinins, than the indiscriminate use of ordinary universal O blood.

14 Fifth Avenue

PHOSPHATES IN THE THERAPY OF CHEMICAL BURNS

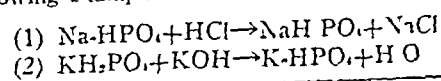
EDUARD POSER, MD AND ERWIN HAAS, PHD CHICAGO

The use of a phosphate buffer for the treatment of burns caused by acidic or basic substances is suggested by the following considerations. The customary therapy of chemical burns has definite disadvantages, particularly when such sensitive tissues as the cornea are involved. In order to achieve rapid and penetrating neutralization of acids and bases, high concentrations of the antidote are required. This prerequisite for successful therapy is not fulfilled by the commonly used reagents, since they can be applied only in dilute solutions because of their unphysiologic nature.

As a further requirement for effective treatment it is essential to maintain the hydrogen ion concentration of the antidote at a physiologic level. The following examples illustrate that the aforementioned requirements are not at all satisfied by the therapeutic agents in general use. A 5 per cent solution of acetic acid, recommended in textbooks for the treatment of burns caused by strong alkali, has a pH of about 2, whereas a 5 per cent solution of sodium bicarbonate, used heretofore for neutralizing acid burns, has a pH of 9. As the physiologic pH is approximately 7, it becomes evident that in the first case the hydrogen ion concentration is a hundred thousand times too high while in the second case it is a hundred times too low. Such deviations from biologically compatible limits are bound to result in harmful effects, especially in the treatment of delicate tissues as those of the eye.

In the past chemical burns due to acids or bases required different antidotes. Therefore a knowledge of the chemistry of the toxic agent and a history supplied by the patient were indispensable. Since the immediate neutralization of the injurious chemical is the most important feature of the treatment designed to reduce to a minimum penetration of the tissues, valuable time may have been lost in gathering the information mentioned. Future surgical or medical care may never restore what could have been saved by adequate, immediate treatment.

The phosphate buffer recommended here for the neutralization of chemical burns is prepared by dissolving 70 Gm of monobasic potassium phosphate, KH_2PO_4 , and 180 Gm of dibasic sodium phosphate, $Na_2HPO_4 \cdot 12H_2O$ in 850 cc of water. The concentration of the solution thus obtained is molar with respect to phosphate, but as the phosphates are physiologically occurring substances they can be safely employed in such high concentrations. Thereby prompt neutralization of the offending chemical is insured without introducing new complications, at the same time limiting the degree of burn and the corresponding amount of scarring that usually results. The phosphate solution is neutral, $pH = 7$, and, owing to its buffering action, the hydrogen ion concentration will always remain in the physiologic range. The fact that it can be used equally well for the neutralization of either acids or bases is demonstrated by the following examples:



From the George Herbert Jones Chemical Laboratory of the University of Chicago.
The Rockefeller Foundation has contributed to the support of the project in which this work developed.

Dr. Linn J. Boyd, Director of Medicine, Metropolitan Hospital and New York Medical College, Flower Fifth Avenue Hospital, and Dr. Louis Greenwald, in charge of hematology, assisted in the preparation of this paper.

1. Ottenberg, Reuben. Studies in Isoagglutination. *J. Exper. Med.* 13: 425, 1911.

2. Coca, A. F. Selection of Donors for Blood Transfusion. *Am. J. M. Technol.* 4: 28, 1938.

3. Hesse, E. Ueber die Verwendung des sogenannten Universal spenders bei der Bluttransfusion. *Deutsche Ztschr. f. Chir.* 245: 371, 1935.

4. Shrimov, V. N. Question of Universal Donor. *Vrach. delo* 22: 403, 1940, abstr. *J. A. M. A.* 117: 492 (Aug. 9) 1941.

5. Witelsky, Ernest, Klendshoj, N. C., and Swanson, Paul. Preparation and Transfusion of Safe Universal Blood. *J. A. M. A.* 116: 2654 (June 14) 1941.

6. Rosenthal, Nathan, and Vogel, Peter, in Mudd, Stuart, and Thalheimer, William. *Blood Substitutes and Blood Transfusion*, Springfield, Ill., Charles C. Thomas, Publisher, 1942, p. 297.

Application of the concentrated phosphate buffer to a normal eye merely results in some hyperemia of the conjunctival tissue, which will disappear on the following day. Using a more dilute solution of the buffer would eliminate even this slight discomfort but would at the same time diminish the effectiveness of the antidote.

SUMMARY

1 Certain unphysiologic antidotes are much too acidic or alkaline for the treatment of vulnerable tissues

2 Burns caused by acids or bases required a different treatment which necessitated a knowledge of the chemistry of the offending substance

3 Phosphate buffer has none of these disadvantages. It is neutral in its reaction, can be employed safely in high concentration to assure rapid and penetrating neutralization and is equally well suited for the treatment of injuries caused by acidic or basic chemicals

Special Article

AMERICAN HEALTH RESORTS

**IMPORTANCE OF REST, EXERCISE AND
DIETARY REGULATION IN
THE SPA REGIMEN**

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These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.

It is difficult to write a readable article about the obvious. Remove the three items mentioned in the title from a regimen and there remains no regimen either at a spa or at any other institution designed to preserve or promote health. There will be no references in this paper to the historical background of spas. This has been covered in another article. As for the literature, discussions of rest, exercise and diet in treatment occur over and over. When a spa regimen is mentioned these three items stand out. In textbooks on medicine, however, it is difficult to find references to a spa or a spa regimen. I have examined the 1941 edition of an excellent textbook of medicine.¹ One hundred and forty-four leading American physicians contributed to this volume. More space is devoted to discussions of treatment than was the practice in textbooks of medicine a few years ago. Even so, in the sixty pages of finely printed index I was unable to find the word spa or spas, although the words rest, exercise and diet in connection with the types of patients who go to spas occur frequently. Why not call a spa a spa?

WHAT IS A SPA?

A spa is an institution built around a "mineral" spring or group of such springs, so equipped and staffed as to utilize the waters from these springs in conjunction with other therapeutic agencies for health purposes. The springs determine the location of spas,

but it takes more than a group of springs to make a spa. The "other therapeutic agencies" are of great variety and will be referred to in other articles in this series, but a spa is not a spa without some of them. This article is concerned with three of the more important of these "therapeutic agencies."

WHO GOES TO SPAS?

Rest, exercise and diet will be discussed briefly as applied to the types of patients who patronize spas. For this purpose some attempt has been made to find out who goes to spas.

In general, patrons of spas consist of middle aged and elderly persons who are normal in health and want to remain so, and persons of the same age groups who are suffering from certain of the chronic diseases or convalescing from surgical operations or acute diseases.

A survey² covering the period from 1933 to 1936 inclusive made at an American spa classified the 6,315 patients treated during this period under the following headings on the basis of the patients' chief complaint: heart and circulatory disorders, including variations of blood pressure, 30.8 per cent, "rheumatic" conditions, including arthritis, myositis, fibrositis and neuritis, 23.7 per cent, gastrointestinal ailments, including those of the liver and gallbladder, 17.6 per cent, nervous conditions, including both functional and organic diseases, 8.4 per cent, metabolic diseases, including diabetes, obesity and endocrine disorders, 4.1 per cent, skin diseases (noninfectious), 2.1 per cent, miscellaneous, 3.2 per cent, no disease, including general debility, 10.1 per cent.

At another American spa³ during the period from 1937 to 1941 inclusive the patients were classed as follows on the basis of the chief complaint or the patient's reason for seeking treatment at a spa: normal, 18.3 per cent, obese, 11.1 per cent, "rheumatic," 23.6 per cent, disorders of the nervous system, 10.5 per cent, disorders of the circulatory system, 11 per cent, disorders of the digestive system, 5 per cent, convalescents, 7.8 per cent, fatigue or exhaustion, 6.3 per cent, miscellaneous, 6.4 per cent. Efforts to get similar information from other spas so far have been unavailing, but with these figures in mind, even though the classes listed are not clearly defined, the question "Who goes to American spas?" is partly answered.

REST AND EXERCISE

Rest and exercise as applied to these groups in the spa regimen will be discussed together because, except for certain special exercises such as corrective exercises and certain forms of local rest such as that obtained by splints or collapse therapy, rest and exercise are simply different degrees of the same thing—just like heat and cold. Absolute rest is analogous to absolute zero temperature and just about as difficult to attain.

For those normal persons who make up 10 to 20 per cent of spa patrons the importance of the proper balance of rest and exercise is admitted. In a recently published article by Piersol⁴ this statement appears:

² McClellan, Walter S. Report of a Survey Made at the Saratoga Spa and Presented in Form of a Chart at the Fifteenth Annual Meeting of the American Congress of Physical Therapy, September 1936.

³ From my own unpublished records. The Homestead Hot Springs, Va.

⁴ Piersol, George Morris. The Value of Physical Therapy in Internal Medicine. J. A. M. A. 117: 1835 (Nov. 29) 1941.

¹ Cecil, Russell L. A Textbook of Medicine by American Authors, edited by Russell L. Cecil, ed. 5 Philadelphia: W. B. Saunders Company, 1941.

"It is generally admitted that the proper kind and amount of physical exercise is essential for the maintenance of good health. In this country during the past fifty years the trend in exercise has been toward the less formal gymnastics, more sport activities and a decided increase in the employment of corrective exercise."

At a spa, exercise for the normal person is usually chosen from the great variety of "sport activities" available—walking on measured, scenic walking trails, golf, tennis, swimming, horseback riding, badminton or other outdoor sports. The kind and amount of such exercise determined on can be fitted easily into the patient's regimen. The degree of medical supervision of this exercise varies greatly from none at all at some spas to that conforming to a systematic program at others. In the supervision of the patient an important point is to protect an enthusiast in golf, tennis or other sport from becoming intemperate in his otherwise wholesome pastime. The patient's rest, like his exercise, should be regular as to time and sufficient in amount, as is the case with normal persons whether at spas or elsewhere. "Opportunity for an abundance of rest is the secret back of the success of many resorts and is a feature *par excellence* that all spas should offer."⁵ Spas provide the setting and the facilities for carrying out a well balanced program of rest and wholesome exercise away from the scene of the person's usual activities.

Rest and Exercise for Arthritic Patients—Approximately 1 patient in 4 who seeks treatment at spas is a victim of one of several maladies often grouped under the heading "rheumatic disease." Most of these patients suffer from atrophic or hypertrophic arthritis. Some suffer from the articular manifestations of gout. Victims of tuberculous arthritis, acute infectious arthritis and acute rheumatic fever go to spas only by mistake. For purposes of this article the rarer forms of arthritis may be ignored and the discussion limited to atrophic and hypertrophic arthritis.

Physicians may differ as to details in the treatment of these two forms of arthritis, but in the emphasis placed on rest there is general agreement. This applies to local rest of the involved joints and to general physical and mental rest. In the active stage of atrophic arthritis, local rest and the prevention of deformity may be obtained by the use of splints. It is my opinion that a spa is not the best place to treat a patient whose disease is so active as to require a splint, though it can, of course, be done. It is in the field of general physical and mental rest that spas have much to offer.

Definitely prescribed periods of rest constitute an important part of the regimen of all arthritic patients at spas, and many spas provide a suitable environment for obtaining such rest away from the stress and strain of business, home and family responsibilities.

Exercises make up an important part of the regimen of arthritic patients who go to spas. Passive exercises are often used to maintain mobility of the joints of patients suffering from atrophic arthritis. These are usually preceded by the application of heat and sometimes massage. The heat may be given as a hot bath, or in some instances active and passive exercises are

given while the patient is under water. Limitation of articular motion is not so pronounced in hypertrophic as in atrophic arthritis, and mobility can be maintained more easily. The amount and intensity of exercise suitable for patients suffering from arthritis will depend on the activity of the disease and the general condition of the patient. As a rule any exercise which results in undue fatigue or pain does more harm than good. The better equipped spas have attendants trained to give these exercises intelligently. The mechanical apparatus with which some spas are supplied is of little practical use in providing suitable exercises for arthritic patients.

Rest and Exercise for Obese Patients—An undetermined number of patrons of spas seek treatment solely because they are overweight. In my own practice slightly more than 11 per cent belong to this group. In addition to the patients who seek treatment solely because they are overweight there are many others who are actually overweight but who go to spas for other reasons. Many patients seeking treatment for arthritis, cardiovascular disease, nervous disorders and other troubles are definitely overweight. When all of these are taken into account it is readily seen that control of weight—which usually means reduction of weight—is a most important item in the regimen of a spa. A few patients who are overweight because of endocrine abnormalities do go to spas, but in my opinion their problems can be solved better elsewhere.

With few exceptions the reduction of body weight depends on the restriction of caloric intake and the stimulation of metabolism. Restriction of caloric intake is purely a matter of control of diet. Stimulation of body metabolism may be accomplished by exercises, baths and drugs. Cold baths will stimulate metabolism, and hot baths of sufficient degree and duration to raise body temperature will increase metabolism. It is my opinion that baths of either type are of minor importance in a weight reducing regimen. Diet will be discussed later, and drugs will be disposed of by pointing out that the dangers involved in the use of such drugs as dimetrophenol or the misuse of thyroid have no place in a spa regimen for the type of patients under discussion.

As for exercises as a means of stimulating metabolism, it can be said that spas provide a wide choice of them under conditions which minimize the drudgery of exercise for that not inconsiderable number of people to whom it is a drudgery. In addition to the wholesome "sport activities" mentioned previously, some spas are equipped with mechanical apparatus such as vibratory and percussion devices, rowing machines and stationary bicycles for both the active and the passive exercise of the voluntary muscles. The use of the vibratory and percussion devices may serve as a substitute for manual massage over which it has no demonstrable advantages. It has not been demonstrated that even heavy massage—mechanical or manual—will remove deposits of adipose tissue. Such treatment when applied to the abdomen may even be dangerous. The mechanical apparatus for active exercises does supply the necessary incentive to certain types of patients to take needed exercise which would not be taken otherwise. In my opinion, to this degree only does such apparatus serve a useful purpose in a weight reducing regimen.

⁵ Wallace, Albert W. The Modern Health Resort J. A. M. A. 106: 419 (Aug. 8) 1936

Rest and Exercise for Patients Suffering from Cardiovascular Disease—At one American spa slightly more than 30 per cent of the patients suffer from some disorder of the circulatory system. In no large group of patients is the proper regulation of rest and exercise more important. Almost without exception, when the treatment of cardiovascular disease is discussed emphasis is placed on the proper kind and amount of rest needed. The patients suffering from cardiovascular disease who go to spas are usually those who have a chronic disease or who are convalescing from an acute disease. For this reason those spas to which such patients go should be adapted by virtue of their natural resources for patients of this type and staffed by physicians and technicians who are qualified to direct and handle them. It goes without saying that not all spas are so adapted and staffed.

In articles on the subject, such statements as these are found: "The matter of rest periods is one of the first things to be discussed. . . . some patients spend one period of twenty-four hours a week in bed."

It [a spa] endeavors to teach a suitable way of living for the individual and has to do largely with rest, relaxation, exercise, diet and the teaching of a calm philosophical outlook in general and upon the cardiovascular handicap in particular.⁶ Some physicians of spas "point out that the spa treatment rarely if ever consists solely of drinking or bathing in spring water, but that many other factors, such as rest, diet, exercise, diversion and climate, play a definite part."⁷ "The types of physical therapy indicated in cardiovascular disease are rest, voluntary exercise,"⁸ Finally, "Physical therapy in vascular disease is most often beneficial when given in an environment far removed from the patient's usual surroundings."⁹

It is said that "hearts are bettered for taking some part of the amount of exercise which they can tolerate without embarrassment."⁶ Systems of exercises have been worked out to provide for this. The Stokes-Oertel graduated hill climbing exercise is an example. This is often combined with restriction of intake of fluids and reduction of body weight by dietary control. A system of resistant exercises for patients suffering from chronic heart disease was developed by Dr. Theodor Schott and his brother August. This originated at a spa—Bad Nauheim—and is still in good repute with internists who are familiar with it. Spas equipped to treat patients suffering from chronic cardiovascular disease provide other suitable means for exercise. Walking trails accurately measured with reference both to distance and to grade enable the physician to give specific directions to his patients regarding exercise. Sports suited to the requirements of such patients are provided. These may include games requiring little physical exertion, such as croquet, or those requiring more effort, such as golf. Even the golf course may be designed for patients suffering from chronic cardiovascular disease, that is, be comparatively level throughout, as is the case at one American spa whose golf course does not contain any grade exceeding 4 per cent. It has been referred to as a "therapeutic golf course."

Enough has been written to indicate the attention given to detail at some spas in providing for the rest and exercise which play so important a role in the regimen of these patients. The effectiveness with which such facilities are utilized depends on the quality of the medical direction just as the effectiveness of any other therapeutic agent depends on the skill, judgment and integrity of the physician who directs its application.

Rest and Exercise for Other Patients—About two thirds of spa patrons are included in the groups already discussed. The remaining third—those who suffer from disorders of the nervous system, disorders of the digestive tract, fatigue or exhaustion, and others listed as miscellaneous—will not be discussed in detail. The regimen for such patients will have to be individualized. Since they are all convalescents or suffering from chronic disease, it is obvious that any such regimen would include scheduled, planned rest and exercise. Spas are well suited to provide such a regimen in an environment conducive to the patient's feeling of well being. Between 5 and 10 per cent of patrons of spas go to them merely because they are tired. Many others listed under other headings who go to spas are tired but are not aware of it. These patients usually suffer from nervous and mental fatigue. The mere act of getting away from home or business affords such patients rest of the kind needed. With the restful atmosphere which should prevail and with the wide range of types of exercises from which to choose a suitable regimen with reference to rest, exercise and diet can be adjusted to the needs of these patients if competent medical direction is provided. Failure is more likely to result from lack of medical direction than from other factors involved.

DIET

I am convinced that the therapeutic measure most frequently advised by physicians is rest. I am convinced also that a thought uppermost in the minds of patients who go to spas—and one about which there is much confusion—centers around matters pertaining to diet. There are reasons why diet should be a matter of concern. Not the least of these is the fact that most people are confronted with it three or more times daily year in and year out. There are reasons for confusion in the lay mind about such matters. It is not necessary to itemize the reasons but that confusion is widespread. I am sure no physician will doubt. When a patient at a spa says "I have been on a very strict diet" a little questioning as to what he—or more often she—means by a strict diet will usually elicit one of the following replies: "I don't eat white bread," "I don't eat potatoes," "I don't eat red meat" or "I don't eat desserts." I should say that, with the exception of carefully instructed patients suffering from diabetes, those suffering from peptic ulcer who have been well handled and those treated for allergy, this is not an exaggerated picture of the lay conception of what is meant by a "strict diet."

Detailed discussion of the diet for each type of patient who goes to spas cannot be given here. I believe it will not be denied that control of diet is an important item in the regimen of such patients. Physicians at spas have access to the same sources of information in dietetics both in health and in disease as do physicians generally. Control of diet is a matter of applying available knowledge to patients who happen to be at spas.

⁶ Comstock, C. R. Convalescence in Coronary Disease with Special Reference to Saratoga. *Spa Bull. New York Acad. Med.* 16: 546-549 (Aug.) 1940.

⁷ Gorham, L. W. The Place of Spas in the Treatment of Chronic Diseases. *New York State J. Med.* 31: 402-405 (April 1) 1931.

⁸ Stroud, W. D. and Comstock, C. R. Principles and Practice of Physical Therapy, edited by Pemberton, Mock and Coulter. Hagerstown, Md. W. F. Prior Company, vol. 1, chapter 13, p. 27.

For the 10 to 20 per cent of normal persons who go to spas the diet should be that for normal persons under similar conditions of activity elsewhere. The discussion of the diet for a normal man or woman does not belong here.

For the 25 per cent of patients of spas who suffer from arthritis the diet should be that adapted to the individual needs of the same type of arthritic patient whether he is at a spa or elsewhere. Books, sections of books⁹ and numerous articles have been written on just what such a diet should be. The prescribing physician has to exercise the same discretion that he is called on to exercise in many other situations. Dr Walter Bauer made an analysis of the various types of diets proposed for arthritic patients. Familiarity with the contents of his article¹⁰ will prove helpful in keeping the prescribing physician properly oriented.

For the undetermined but large number of people at spas who are overweight, control of diet is by far the most important consideration. The principles governing control of diet at spas do not differ in any essential way from similar methods elsewhere. A regimen which includes suitable control of diet along with regulated exercise will prove effective in the reduction of surplus weight. Such a regimen can be carried out at spas without the use of drugs, excessive sweating, purging or other forms of dehydration. The success and safety of the regimen will depend on the adequacy of the medical supervision. "Mineral waters, except for possible laxative effects, have no peculiar virtue"¹¹ in a reducing regimen.

For that other large group of patients of spas—patients suffering from cardiovascular diseases—the diet, for the most part, is directed toward the control of weight. In some cases the intake of fluids and mineral salts has to be taken into account. A spa organized for the care of such patients usually provides physicians capable of guiding them in such matters.

For the remaining third of patients who go to spas the diet should be adjusted to the individual needs of each patient. In the well organized spas this usually can be done. Except for the rest he might get, there is no reason for a patient who has a duodenal ulcer to go to a spa, but, should he go, there is no reason why he should not be able to carry out his dietary program. The same applies to patients who have diabetes, disease of the gallbladder, "colitis" or an irritable colon, and so for the others. It all boils down to the same thing. It is this. The principle governing dietary measures are the same for a given type of human being whether he happens to be living at a spa, in a hospital or at home. Since a large number of patients suffering from a great variety of chronic diseases do go to spas—whether they should or should not is beside the point—it means that if spas are to maintain a standard at which they can command the confidence of the medical profession they must provide medical supervision and control of such quality as to guide these patients properly in health matters whether they pertain to rest, exercise, diet or any other "therapeutic agent."

Dietary fads should not have any place in the regimen of a spa.

⁹ Pemberton, Ralph. Arthritis and Rheumatoid Conditions, Philadelphia, Lea & Febiger, 1929.

¹⁰ Bauer, Walter. What Should a Patient with Arthritis Eat? J. A. M. A. 104:1 (Jan 5) 1935.

¹¹ McLester, James C. Nutrition and Diet in Health and Disease, ed. 3, Philadelphia, W. B. Saunders Company, 1939, p. 443.

Council on Medical Service and Public Relations

THE COUNCIL HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING STATEMENT
J. W. HOLLOWAY, JR., Acting Secretary

A STATEMENT OF GENERAL POLICIES

Pursuant to carrying out the duties imposed on it by the House of Delegates, the Council has adopted the following general policies:

1 The Council on Medical Service and Public Relations recognizes the desirability of widespread distribution of the benefits of medical science, it encourages evolution in the methods of administering medical care, subject to the basic principles necessary to the maintenance of scientific standards and the quality of the service rendered.

It is not in the public interest that the removal of economic barriers to medical service should be utilized as a subterfuge to overturn the whole order of medical practice. Removal of economic barriers should be an object in itself.

It is in the public interest that the standards of medical education be constantly raised, that medical research be constantly increased and that graduate and postgraduate medical education be energetically developed. Curative medicine, preventive medicine, public health medicine, research medicine and medical education all are indispensable factors in promoting the health, comfort and happiness of the nation.

2 The Council through its executive committee and secretary shall analyze proposed legislation affecting medical service. Its officers are instructed to provide advice to the various state medical organizations as well as to legislative committees concerning the effects of the proposed legislation. It shall likewise be the duty of its officers to offer constructive suggestions to bureaus and legislative committees on the subject of medical service.

3 The Council approves the principle of voluntary hospital insurance programs but disapproves the inclusion of medical services in those contracts for the reasons adopted by the House of Delegates at the 1943 meeting.

4 The Council approves voluntary prepayment medical service under the control of state and county medical societies in accordance with the principles adopted by the House of Delegates in 1938. The medical profession has always been strongly opposed to compulsory health insurance because (1) it does not reach the unemployed class, (2) it results in a bureaucratic control of medicine and interposes a third party between the physician and the patient, (3) it results in mass medicine which is neither art nor science, (4) it is inordinately expensive and (5) regulations, red tape and interference render good medical care impossible. Propaganda to the contrary notwithstanding, organized medicine in general, and the American Medical Association in particular, have never opposed group medicine prepayment or group medical practice as such. The American Medical Association and the medical profession as a whole have opposed any scheme which on the face of it renders good medical care impossible. That group medicine has not been opposed as such is evidenced by the fact that there are many groups operating in the United States which have the approval of the medical profession, and members of these groups are and have been officials in the national and state medical organizations. That group medicine is the Utopia for the whole population, however, is not probable. It may be and possibly is the answer for certain communities and certain industrial groups if the medical groups are so organized and operated as to deliver good medical care.

5 The Council believes that many emergency measures now in force should cease following the end of hostilities.

6 The Council believes that the medical profession should attempt to establish the most cordial relationships possible with allied professions.

7 There is no official affiliation between the American Medical Association and the National Physicians Committee.

However, since it is the purpose of the National Physicians Committee to enlighten the public concerning contributions which American medicine has made and is making in behalf of the individual and the nation as a whole, it is the opinion of the Council that the medical profession may well support the activities of the National Physicians Committee and other organizations of like aims.

8 American medicine and this Council owe a responsibility to our colleagues who are making personal sacrifices to answer the call of the armed forces. Therefore the Council expresses the desire to cooperate with the medical committee on postwar planning in order to assist our colleagues in reestablishing themselves in the practice of medicine and in the preservation of the American system of medicine.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

ASCORBIC ACID (See New and Nonofficial Remedies, 1943, p. 600)

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Ascorbic Acid (Crystals) 1 ounce and 5 ounce packages

Tablets Ascorbic Acid 25 mg, 50 mg and 100 mg

NICOTINIC ACID (See New and Nonofficial Remedies, 1943, p. 596)

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Nicotinic Acid (Powder) 1 ounce, ¼ pound and 1 pound packages

Tablets Nicotinic Acid 25 mg and 100 mg

PENTOBARBITAL SODIUM (See New and Nonofficial Remedies, 1943, p. 495)

The following dosage form has been accepted:

THE WARREN-FEED PRODUCTS CO., COLUMBUS, OHIO

Capsules Pentobarbital Sodium 0.1 Gm

SULFATHIAZOLE (See New and Nonofficial Remedies, 1943, p. 182)

The following dosage form has been accepted:

GEORGE A. BREON AND COMPANY, KANSAS CITY, MO

Sterators Sterile Sulfathiazole (Crystals) 5 Gm

SULFANILAMIDE (See New and Nonofficial Remedies, 1943, p. 175)

The following dosage form has been accepted:

GEORGE A. BREON AND COMPANY, KANSAS CITY, MO

Sterators Sterile Sulfanilamide (Crystals) 5 Gm

DIGITALIS (See New and Nonofficial Remedies, 1943, p. 289)

The following additional dosage form has been accepted:

JOHN WYETH & BROTHER, INC., PHILADELPHIA

Capsules Digitalis Leaf Defatted ½ U. S. P. Unit

MAGNESIUM TRISILICATE (See New and Nonofficial Remedies, 1943, p. 369)

The following dosage form has been accepted:

BURNBOURNES WELLCOME & CO., INC., NEW YORK

Tablets Magnesium Trisilicate 0.486 Gm

EPHEDRINE SULFATE (See New and Nonofficial Remedies, 1943, p. 256)

The following dosage form has been accepted:

BURNBOURNES WELLCOME & CO., INC., NEW YORK

Solution Ephedrine Sulfate 3 per Cent Preserved with chlorobutanol 0.5 per cent 1 fluidounce and 1 pint bottles

Council on Foods and Nutrition

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
JAMES S. McLESTER, Chairman

SCOPE OF COUNCIL

The passage of the Federal Food, Drug and Cosmetic Act, June 25, 1938, greatly strengthened the power of the federal government to deal with the labeling of foods, drugs and cosmetics, the maintenance of standards of quality and related problems. Many of the activities of the American Medical Association's Council on Foods and Nutrition have dealt with such questions. These activities were initiated and carried on by the Council at the home office of the American Medical Association as a public service. The well known seal plan of the Council was devised as a means of encouraging firms to secure as much scientific information as possible concerning their products, to label these products honestly and informatively, and to advertise them in ways that avoid all misleading implications. The success with which all of this has been done is readily evident to any one who will undertake an examination of the Council's book *Accepted Foods*, published in 1939, in which are listed 1,653 firms whose 2,706 individual products carried the seal at that time. The Council wishes to record its appreciation of the willingness of these firms to cooperate in the wording of their labels and their advertising and in the maintenance of high standards of quality in recognition of which the Seal of Acceptance was given.

For some time the Council has had under advisement the question of limitation of its scope of activities. Various reasons have operated to cause this, but the most cogent one has been the passage of the Food, Drug and Cosmetic Act, and the continued advance which the Food and Drug Administration has been able to make under this act in establishing standards of identity for various foods and rules regarding the labeling of them. At its annual meeting held July 23 in Chicago the Council finally took action to limit the number of specific products eligible for the seal. It was voted to restrict the use of the seal to "special purpose" foods, which may be defined as "any food promoted for a special group of the population in relation to health, growth and development." Familiar examples of special purpose foods would be those prepared especially for babies and products designed for feeding invalids. Products that may be valuable, but which are offered for use by the population in general, are classified as "general purpose" foods, and under the action voted by the Council are, with perhaps a few exceptions, outside its scope and therefore will no longer be considered for the seal. It is evident that by its action the Council has signified that, so far as the use of the seal on individual products is concerned, it intends to devote its attention particularly to foods that stand in very definite relation to specific medical and health problems. The current popular interest in the science of nutrition, stimulated in considerable part by the war, the nutrition program of agencies of the government, the Red Cross and other organizations, can no doubt be relied on to develop interest in the greater use of more valuable foods by the population at large. The Council also voted, however, to consider what might at first sight appear to be exceptions to this category of special purpose foods, if such action seems desirable and in the public interest. The wording of this part of the motion is as follows: "Except that the Council may, under special circumstances, consider the acceptance of any product when its nutritional importance or the claims made for it seem significant for the public health." Thus the Council has signified its continued freedom of action to deal with any food product if such action is deemed especially important.

Firms whose "general purpose" foods now carry the seal are allowed the period of one year from date of publication of this notice during which to dispose of their supply of remaining labels now carrying the seal.

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SATURDAY, NOVEMBER 6, 1943

EPIDEMIC HEPATITIS, OR CATARRHAL JAUNDICE

Until recently there has not been essential modification of the original concept of catarrhal jaundice advanced by Bamberger in 1855 and supported by Virchow in 1865. Now, however, numerous clinically similar cases have appeared in epidemic proportions in troops and in civilian groups in almost all countries. Study of these events has resulted in a reconsideration of the basic interpretations. Formerly the initial lesion in this disease was considered a gastroduodenitis followed by spread of "catarrh" to the epithelium of the bile ducts which thereby produced obstructive jaundice. The occurrence of a biphasic van den Bergh reaction stimulated doubts of this simple explanation and suggested that damage of the liver must be present either alone or in combination with biliary obstruction. This altered theory has given rise to a changed nomenclature in which the term epidemic hepatitis or infective hepatitis (the former probably being preferable) has tended to replace the older term of catarrhal jaundice.

Cameron¹ reports studies at two army general hospitals in Palestine during 1940 and 1941, when "infective hepatitis" was epidemic among the troops. The clinical picture of the disease developed in collaboration with Colville is based on the clinical records of 170 cases. The minimum incubation period is apparently thirty-two days, but in many cases much longer. The initial stages of the disease resemble sand fly fever, although in epidemic hepatitis the headache is less intense and the characteristic pain behind and on movement of the eyes found in sand fly fever is here lacking. Initial severe anorexia is a striking and almost diagnostic feature. Disinclination for smoking is common, nausea is frequent but vomiting unusual. Abdominal discomfort, with a tendency to constipation rather than diarrhea, occurs frequently. Fever was present in all cases observed during the preicteric stage, usually it is of a regular type varying between 99 and 103 F

and continuing for three to six days, when jaundice appears. With the development of jaundice the initial symptoms rapidly subside. The depth of jaundice varies from a light coloration of the conjunctiva to a deep icterus involving the whole body. It lasts an average of twenty-one days, reaches a maximum intensity at five days and has a range varying from five to seventy-two days. Bradycardia occurs as soon as the development of jaundice, but this is not diagnostic since it seems to accompany almost all virus infections. Transient enlargement of the liver was noted in 97 of the 170 cases. There was a scattering of other signs or symptoms, the most frequent being splenic enlargement, which was encountered in 46 cases. Five points are of major importance for diagnosis in the preicteric stage: anorexia, abdominal discomfort with or without hepatic enlargement and tenderness, absence of leukocytosis, increased urobilinogen in the urine, and histamine wheal test for latent jaundice. Deaths did not occur in the entire series, most patients recovered in thirty-five days. Treatment should include isolation of the patient and a minimum of one month hospitalization. The presence of clay colored feces was considered an indication for a low fat and cholesterol diet, in cases in which the feces remained persistently pale, bile salts were given so that fat could be introduced into the diet. All patients must refrain from alcohol for a minimum period of three months on the theory that alcohol lowers the resistance of the liver.

The infection is believed to be due to a virus. A number of animal inoculation experiments have been made and several attempts to transmit the disease by insect vectors. Van Rooyen and Gordon² obtained bile and stomach washings from 10 patients and fed large volumes of each specimen to animals. The animals employed were mice, white rats, jerboas, rabbits, guinea pigs, monkeys, Abyssinian baboons, a young pig and 3 kittens. In addition blood containing 1 per cent sodium citrate which had been withdrawn in 20 proved cases was introduced into each of these animals by various routes—subcutaneously, intravenously, intraperitoneally, intracerebrally, intratesticularly and intracorneally. Definite results were not obtained. Similar experiments were also performed by Cameron. Samples of blood were withdrawn from patients as soon as possible after diagnosis. Part of the blood was allowed to clot, but sodium citrate was added to the larger portion. Monkeys, guinea pigs, dogs, mice, rats and hamsters were employed as the experimental animals. Some of the animals received whole blood or plasma without further treatment. For others a leukocytic fraction was prepared by centrifugation of the citrated blood for an hour, the resulting sediment being then suspended in saline solution and injected. Careful clinical observations, blood count-

¹ Cameron, J. D. S. *Quart. J. Med.* 12: 139 (July) 1943.

² Van Rooyen, C. E., and Gordon, Ian. *J. Royal Army Med. Corps.* 79: 19 (Nov.) 1942.

and temperature charts were made. In the guinea pigs alone some suggestive observations were recorded, including leukopenia appearing five to twenty days after injection in all of them. One animal showed necrosis of liver cells and round cell infiltration of the portal tract. Because of the simultaneous occurrence of jaundice in horses it has been necessary to exclude piroplasmiasis as a cause of human hepatitis. Cameron reports experiments carried out by Captains Colville and Hynds in which 6 horses were injected with blood or serum from 6 patients with hepatitis. Repeated blood counts and close veterinary observation failed to reveal any effects.

It is agreed by Cameron, by Van Rooyen and Gordon and by others that jaundice may or may not be present in this disease. Van Rooyen and Gordon did not observe indications of obstruction or catarrh of the bile passages and therefore believe that the jaundice is toxic and due primarily to damage of the liver parenchymal cell. All are agreed that this disease is highly contagious and emphasize the necessity for treating it as a serious liver disease and one in which lowered general resistance such as that which occurs so commonly in military campaigns is a predisposing factor. Much further work is needed in order to determine the responsible agent, the mode of spread and possible relations to certain animal diseases.

THE IRRITANT EFFECT OF CATGUT

The irritant effect of catgut on living tissues has been commented on in a previous editorial¹ in *THE JOURNAL*. The clinical experience of Halstead, Jenkins, Kraissl, Whipple and others and the experimental demonstration by Meleney stress this undesirable effect of surgical gut as compared with some of the non-absorbable suture materials. These observers believed that the irritating effect was due to the catgut per se. Halstead believed that buried catgut serves as culture medium for saprophytic organisms which are carried into it from the deep epithelium and the follicles of the skin. Kraissl demonstrated the possibility of an allergic reaction to catgut in a patient with edema of the edges and disruption of the abdominal wall. The irritant effect manifests itself in the wound by induration, redness, serum formation, lowered tissue resistance with increased susceptibility to infection from organisms introduced at operation or from the blood stream, and retardation of healing.

The recent experiments by Dunham and Jenkins,² however, establish that it is the tubing fluid in which the catgut is kept that is responsible for the irritating effect. Surgical catgut has customarily been provided

in glass tubes with either an anhydrous hydrocarbon liquid for boilable catgut or an alcoholic solution for nonboilable gut. The anhydrous boilable tubing fluids have generally been xylene. These investigators state that the alcoholic solutions of numerous products examined by them contain appreciable quantities of hydrocarbon, which they believe is a residuum from the heat sterilization process, not removed during the process of manufacture before the alcoholic solution was added and the tube sealed. They believe this to be a common factor for the catgut, regardless of whether it was boilable or nonboilable. Their experiments clearly demonstrate that a fairly substantial part of the tissue irritation characteristic of catgut is due to the irritant hydrocarbon carried into the tissues with the gut. The presence of alcohol in the gut from non-boilable tubing fluid or from dipping boilable gut in 70 per cent alcohol to induce pliability contributes in part to the tissue irritation. However, they believe that the action of the alcohol is of secondary importance. They also found that those products which were characterized by excessive exudate and profuse polymorphonuclear leukocytic invasion of surrounding tissues generally had a high hydrocarbon content of the tubing fluid. They further suggest that the polymorphonuclear leukocytic response, which in their previous experiments was shown to hasten the onset of the mechanism of absorption, is probably induced by the extraneous tubing fluid irritants rather than by the catgut per se. Once this leukocytic mechanism of absorption has started to break down the catgut, it is not unlikely that the products of breakdown may further act as irritants to the tissues, so that the irritation inaugurated by the tubing fluid may be enhanced or prolonged. The combination of these two factors may be important in the tissue reaction to catgut.

Analytic study by Sidwell³ of the American Medical Association Chemical Laboratory demonstrated the presence of up to 14 per cent of the water insoluble liquid aromatic hydrocarbons present in some of the samples of the nonboilable surgical gut tubing fluids examined. The physical and chemical properties of the water insoluble materials isolated from various specimens led to the conclusion that the tubing fluid contains material closely related to a coal tar distillate known as "xylene fraction" or solvent naphtha. Jenkins and Dunham⁴ conclude that, from the point of view of obtaining optimum wound healing in surgery, the introduction of tubing fluid irritants into the tissue with suture material is not in the best interests of the patient or the surgeon. The elimination of tubing fluid irritants from surgical gut should result in better clinical results with the use of absorbable suture material.

¹ The Renaissance of Silk in Surgery editorial J A M A 113: 1417 (Oct. 7) 1939

² Dunham C L and Jenkins H P Surgical Gut (Catgut) Tubing Fluid as a Tissue Irritant Ann Surg 118: 269 (Aug) 1943

³ Sidwell A. E. Jr Hydrocarbon Content of Nonboilable Surgical Gut Tubing Fluids Ann Surg 118: 285 (Aug) 1943

⁴ Jenkins H P and Dunham C L Irritant Properties of Tubing Fluids as a Factor in the Tissue Reactions Observed with Surgical Gut (Catgut) Ann Surg 118: 288 (Aug) 1943

On the part of my doctor is forwarded to the council from every magistrate's court, every court of justice and every police office in the kingdom. While the council records every offense or conviction against medical practitioners, its principal interest is in that which relates to "infamous conduct in a professional respect." Such conduct has been defined by Lord Justice Lopes as follows:

If a medical man in the pursuit of his profession has done something with regard to it which will be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency, then it is open to the General Medical Council if that be shown to say that he has been guilty of infamous conduct in a professional respect.

The question is not merely whether what a medical man has done would be an infamous thing for any one else but a medical man to do. He might do an infamous thing which would be infamous in any one else, but if it is not done in a professional respect it does not come within section 29.

The particular section lists the following offenses which are considered as "infamous conduct in a professional respect": signing certificates which do not meet with the particular requirements, assisting unqualified practitioners in treatment of patients and drunkenness. The last named offense appears to be the most common "crime" and is particularly serious if a practitioner is found to be drunk while driving a car.

Of special interest are three offenses which are grouped as the "three A's": Advertising, Abortion and Adultery. Advertising is not permitted; the prohibition includes such types of advertising as newspaper interviews with a doctor, who may be referred to as "a distinguished surgeon" or "a well known physician." As to abortion, it is emphasized that, whatever views one holds regarding it, under the laws of Great Britain abortion is a felony which is punishable by terms of penal servitude. The General Medical Council takes the attitude that the council is no judge of morals and that its function is not to punish the members of the medical profession but rather to protect the public. Adultery per se would not be considered "infamous conduct in a professional respect," and the General Medical Council takes no note of adultery as such. If, however, it is adultery with a person who is a patient, the wife of a patient or the member of a patient's family, then the council may say that the doctor has abused his position of trust. The sincerity of this statement is evident from the advice Sir Eason offers, which is: "If you must have irregular relationships with women, you should keep those relationships away from the professional side of your life."

Like most English institutions, the General Medical Council has considerable legal authority but derives most of its power from its moral authority. It has succeeded in molding the British medical profession into an organic whole without at the same time interfering with the healthy rivalry and individualism of

the various educational institutions. The council controls the standards of medical education by its power to represent to the Privy Council that a licensing authority should have its license revoked because its teaching and its examinations are not sufficient, and the council would take the same step if any licensing body should attempt to impose any particular theory of medicine or surgery. The council may require information to discover these points and may appoint inspectors and visitors to the various authorities.

The General Medical Council also provides for the publication of the British Pharmacopeia, a function entrusted in our country to the United States Pharmacopeal Convention.

Current Comment

THE NEED FOR PHYSICAL AND OCCUPATIONAL THERAPY TECHNICIANS IN WARTIME PHYSICAL RECONSTRUCTION

Large numbers of physical therapy and occupational therapy technicians are needed to meet the expanding requirements of wartime physical reconstruction. The Army already has physical therapy technicians serving in a hundred and forty Army hospitals within the continental limits of the United States and in thirty-four Army hospitals overseas. Recently the announcement was made that the Army still needs a thousand more physical therapy technicians. The Navy, the Veterans Administration, the Public Health Service and the civilian hospitals also require large numbers of physical and occupational therapy technicians to assist in rehabilitation of persons disabled by the war. The distinguished educator Ernest J. Jaqua, president of Scripps College in California, now serving as director of the Professional and Technical Division of the Bureau of Training War Manpower Commission, recently made a tour among middle and far western universities in the interest of physical and occupational therapy. He concluded that it would be necessary to develop additional training schools at larger educational centers. The views expressed by this educator are gratifying to physicians interested in physical rehabilitation. Some of his observations follow:

Hearty cooperation between the liberal arts and medical faculties is essential for complete success of a program of training in these fields. Whenever possible the two courses of study should be under joint administration since the first year of technical training can be practically identical. There is much overlapping in actual operation.

The general supervision of the training program can best be entrusted to the medical school since all courses of study must be approved by the Council on Medical Education and Hospitals of the American Medical Association or to a joint committee of the medical and arts faculties the former providing the chairman. It is important to recognize the dominant medical implications from the outset.

The chief difficulty in establishing strong new schools of physical and occupational therapy at this time is the scarcity of qualified teachers. In the case of physical therapy this means doctors who have specialized in this field in medical

school and have been directors of physical therapy departments in hospitals. These men are few and many of the best ones are now in the Army. As for occupational therapy teachers, they too are scarce and military hospitals are engaging them as rapidly as possible to direct newly established departments.

The founding of several new schools of physical and occupational therapy in state universities under experienced joint leadership where both medical and arts courses and hospital facilities are immediately available will have the double effect of giving added professional standing to these rapidly developing medical fields and at the same time discouraging the establishment of departments in institutions lacking medical affiliations.

Perhaps the deepest impression gained from this survey of physical and occupational therapy schools is one of admiration for the splendid pioneer work of the older schools in the face of half hearted appreciation and support by the medical profession generally and only the vaguest knowledge of their importance on the part of the lay public. The first approved schools have steadily raised their professional standing, extended the range and quality of their courses of study (especially in medical subjects) and proved beyond all doubt the indispensable nature of their services to the medical profession. Indeed, thoughtful observers are deeply convinced, and the war will drive home this point with increasing poignancy, that the medical school or hospital which does not now take active measures to provide these services will some day be awakened to the fact that certain features of the magnificent procession of health have moved past while they were unaware of their presence or unmindful of their significance.

IS TUBERCULOSIS DISAPPEARING?

The mortality rate from tuberculosis "was cut in half during the first twenty years and then halved again by 1940, that is, the 1940 rate was less than one-fourth that at the beginning of the century"¹. The average for the three years 1939-1941 established an all time low record of 45.9 per hundred thousand of population. While this decline has been general for all ages and races, the rate of decline in the productive years 20 to 45 has been slower than in later years. "The remarkable decrease in tuberculosis mortality, which resulted in lowering tuberculosis from one of first rank in numerical importance to seventh, conceals the fact that this favorable situation does not hold for all age groups, from early adulthood to age 35 it is still the first killer." The percentage of tuberculosis deaths to deaths from other causes by age starts at a low point in the younger ages, increases rapidly to reach a maximum at the most productive age periods, then declines continuously thereafter. Mortality for tuberculosis is highest in cities of 100,000 or more population. For males it declines steadily in cities of 2,500 to 100,000. It is lowest in rural areas. The deaths of females are lowest in cities of 2,500 to 100,000 population, although the difference is not great. The rate for males is considerably higher than for females throughout the population. Tuberculosis is still much more fatal among the nonwhite races, but the rate of decline is more rapid in the colored population. "Many factors have contributed to the extraordinary achievements in the control of tuberculosis as reflected in the reduction of the death rate from around 200 per hundred thousand at the beginning of the cen-

tury to less than 45 per hundred thousand at present. These factors are in the main the results of man's endeavor to control his environment. Some are tangible, such as the discovery of the causative organism and modes of transmission of the disease, many others are not so definite and may be stated vaguely to be the results of improvements in the 'standard of living'. The direct relationship of any one factor to the reduction of tuberculosis mortality may be difficult to prove. The combination of all factors, however, has reduced the mortality rate in the course of half a century to such an extent that the eradication of tuberculosis is within the realm of possibility."

LIEUT GEN MARK W CLARK EULOGIZES MEDICAL CORPS' SERVICES

Under Medicine and the War, in this issue of THE JOURNAL, appears a copy of a letter sent by Lieut Gen Mark W Clark, commanding General of the Fifth Army, to Major Gen Norman T Kirk, Surgeon General of the United States Army, eulogizing the magnificent service rendered by the medical department in the invasion of Salerno Bay. The efficiency of the performance is testimony to the wholehearted, sacrificing effort of the medical profession of the United States. In June 1940 Gen George Dunham, delegate from the United States Army Medical Corps to the House of Delegates of the American Medical Association, presented a call to the medical profession to mobilize for the war. Under Surg Gen James C Magee thousands of physicians and Medical Corps men were enrolled and units like the evacuation hospitals, to which special praise is tendered, were established. Under Major Gen Norman T Kirk the medical profession continues to respond with courage and self sacrifice. The letter of General Clark is special testimony to the magnificent work of the battalion surgeons who move up with the troops to the front lines and render their aid under enemy fire. General Clark emphasizes particularly the closeness of the medical service to the actual front. As the war intensifies and as our Army drives on to ultimate victory the demand on the medical profession is likely to become greater, the need for its service more imminent. At this time several thousand more doctors are needed and must be enrolled. The letter of General Clark should be an inspiration to every man who can possibly meet the call to come forward and offer his services.

MEMORIAL TO WILLIAM BEAUMONT

A permanent memorial to William Beaumont, known as the founder of our modern knowledge of the physiology of the stomach, has been assured by the transfer of the historical "Early House" on Mackinac Island to public ownership. In this house Alexis St Martin, the French Canadian voyageur who was the subject of Beaumont's famous studies, received his accidental shotgun wound on June 6, 1822. In the actual work of restoration technical advice will be obtained from a committee of the Michigan State Medical Society, the National Park Survey and other agencies and historical sources.

¹ Yerushalmy, J., Hilleboe, H. E., and Palmer, C. E. Tuberculosis Mortality in the United States 1939-1941, Pub Health Rep 58 1457 (Oct 1) 1943

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

GENERAL CLARK EULOGIZES MEDICAL SERVICES AT SALERNO

HEADQUARTERS FIFTH ARMY
Office of the Commanding General
A P O No 464, U S Army

Major General Norman T Kirk
Surgeon General, U S Army
War Department
Washington, D C

In the field
25 September 1943

Dear General Kirk

I desire to express the highest commendation for the wonderfully fine work performed by the medical units of this Army. Their devotion to duty under the hazardous and trying circumstances of the landing in Salerno Bay and their skill and efficient administration reflect the best traditions of the Service. Many wounded officers and men, who will eventually be restored to full health, would have died but for the effective work of the Medical Corps. I am especially well pleased with the performance of the Surgeon Fifth Army. He has done a magnificent job.

From the first landing to the date of this letter, 3,335 casualties have been admitted to Fifth Army hospitals. The first hospital opened within 3 to 5 miles of the front lines. The next hospital began to function the following day still closer and under the most difficult conditions. Neither hospital had any nurses when opened. Thus far there have been only 42 deaths in the hospitals. Thirty-two of these cases were those of U S personnel who died from wounds. Five were U S personnel who died from disease or injuries, 5 were enemy who died of wounds. Many of those who survived would never have reached a hospital alive had the hospitals been located at a normal distance from the front.

Two thousand and sixty-one cases have been evacuated to North Africa by air and sea.

The beach medical service was superior. One medical battalion distinguished itself on the beaches under heavy fire early in the operation. I shall recommend that the unit be cited for its gallant work under terrible conditions.

The medical supply system began to function according to plan with the assault wave, and despite the most difficult conditions it rapidly developed to the highest state of efficiency.

Among the difficulties with which the medical services have had to cope were the loss of the entire equipment of our third evacuation hospital and the bombing of a hospital ship which was bringing the nurses. Fortunately only one nurse was injured, and all are again on their way to Italy to rejoin their units.

The whole performance of the Fifth Army medical services has been most heartening to me and has been of incalculable aid in the operation. I have been so favorably impressed with their performance that I cannot forbear to write you this personal letter to tell you of my gratitude and admiration.

Mark W Clark,
Lieutenant General, U S Army,
Commanding

ARMY

THE BRUNS GENERAL HOSPITAL

The Bruns General Hospital, which was formally dedicated on September 22, is located in Santa Fe, N M. The hospital was activated on February 18 and the formal flag raising was celebrated April 19, at which time the first patient was admitted. Although the hospital was built with a thousand bed capacity, recent construction will soon afford 1,500 beds. It is of cantonment type composed of open and closed wards, officers' and nurses' quarters, barracks, utility shops, warehouses and a chapel. All the wards, quarters and barracks are connected by either closed or covered walks.

The Bruns General Hospital was named in honor of the late Col Earl Harvey Bruns, who was recognized as one of the world's leading authorities on pulmonary tuberculosis. The hospital has not been designated as one for any particular specialty, but rather a typical general hospital. It is equipped to care for surgical, medical, eye, ear, nose and throat, genitourinary and neurologic and psychiatric cases.

The medical officers assigned to the Bruns General Hospital as of September 27 were as follows:

Brig Gen Larry B McAfee, commanding general
Lieut Col Robert J Wilson, executive officer, public relations officer and medical inspector
Capt Charles B Ahlefeld, M C, receiving and evacuation officer, Kansas City, Mo

SURGICAL SERVICE

Major John D Koucky, M C, chief, River Forest, Ill
Major Marshall W Alcorn, M C, assistant chief, of Burlington, Wis
Capt Oscar T Roberg Jr, M C, El Paso, Texas
Capt John O Hanson M C, Chicago
Capt Herbert J Fischer, M C, chief of orthopedic section, Detroit
Capt LaMar H Davenport M C, DuBois, Pa
1st Lieut Paul J Martin M C, Omaha
1st Lieut Herman H Levin M C, Newcastle, Pa
1st Lieut Joseph T Kauer M C, Bronx, N Y
1st Lieut Johnson Underwood Jr M C, Parkville, Mo
1st Lieut Robert R Vandemark, M C, Stoughton, Wis

MEDICAL SERVICE

Major George J Kasthn, M C, chief, Pittsburgh
Major Samuel I Kooperstein M C, assistant chief, Jersey City, N J
Major John D Ferrara, M C, Jacksonville, Fla
Major Jacob N Lande M C, Sioux City, Iowa
Capt Harry E Fischer M C, Detroit
Capt Erich P Hausner, M C, Amsterdam, N Y
Capt Herbert B Ellis, Raton, N M
Capt Max J Yacht M C, Brooklyn
1st Lieut Edward J Brazinski M C, Perth Amboy, N J
1st Lieut Clifford H Kalb M C, Grafton, Wis
1st Lieut Juan Larralde M C, New York
1st Lieut Ralph G Leighty M C, Susswale, Pa
1st Lieut Theodore J Talbot M C, New Brighton, N Y
1st Lieut John C Patterson M C, Freehold, N J
1st Lieut Hyman E Bass, M C, Bronx, N Y

NEUROPSYCHIATRIC SERVICE

Lieut Col Cullen W Irish, M C, chief, Los Angeles
Major Jacob N Friedman, M C, New York
Capt Robert E McDade M C, Philadelphia
1st Lieut Morris V Borenstein, M C, Springfield, Mass
1st Lieut Edward G Feldman, M C, Chicago

EYE, EAR, NOSE AND THROAT

Major Gordon H Pumphrey, M C, chief, Mount Vernon, Ohio
Capt Earl W Martens M C, Milwaukee
1st Lieut Edward Schwartz, M C, Chester, Pa

GENITOURINARY SERVICE

Capt Frank L Larkin, M C, Scranton, Pa

LABORATORY SERVICE

Major Elson B Helwig, M C, chief, St Louis
1st Lieut Ralph C Brown M C, Winnetka, Ill
1st Lieut Daniel E Johnson Sn. C, Muncie, Ill
2d Lieut Charles C Croft, Sn C, Washington, D C

ROENTGENOLOGIC SERVICE

Major Murray M Friedman, M C, Altoona, Pa

OUTPATIENT SERVICE

Capt Herbert S Weichsel, M C, Poughkeepsie, N Y

DENTAL SERVICE

Major Oscar J Ogren, D C, chief, Minneapolis
Capt Eldon L Armer, D C, Tucson, Ariz
Capt Eldon L Njos, D C, Baldwin, Wis
1st Lieut Richard L Mosgrove, D C, Lincoln, Neb
1st Lieut Frank A Lemone, D C, Shreveport, La
1st Lieut Arthur O McGowan, D C, Kansas City, Kan
1st Lieut Gustave P Brickbauer, D C, Milwaukee

COL STANHOPE BAYNE-JONES APPOINTED
DIRECTOR OF TYPHUS COMMISSION

The War Department, Washington, D C, announced on October 21 the appointment of Col Stanhope Bayne-Jones, M C, A U S, as director of the United States of America Typhus Commission. Colonel Bayne-Jones succeeds Brig Gen Leon A Fox, U S Army, who asked to be relieved as director and appointed field director in order to give all his time to the field work of the commission, which has been operating abroad, particularly in the Middle East, since the first of this year. Colonel Bayne-Jones takes over the directorship in addition to his other duties as assistant director, Preventive Medicine Division, Office of the Surgeon General, where the main office of the commission has been established. In addition to General Fox and Colonel Bayne-Jones, members of the commission include Major Gen LeRoy Lutes, U S Army, Rear Admiral Charles S Stephenson (MC), U S Navy, Brig Gen James Stevens Simmons, M C, U S Army, Dr R E Dyer, director of the National Institute of Health, U S Public Health Service, Col Harry Plotz, M C, A U S, Col William L Wilson, M C, U S Army, Comdr Thomas J Carter (MC), U S Navy, Dr Norman H Topping, U S Public Health Service, Major John C Snyder, M C, A U S, Major Charles M Wheeler, Sanitary Corps, A U S, Lieut Comdr W B McAllister (MC), USNR, Lieut Comdr A Yeomans, USNR, Dr Alexander G Gilliam, U S Public Health Service, and Capt. Byron L Bennett, Sanitary Corps, A U S.

Colonel Bayne-Jones is a former dean of Yale University School of Medicine, New Haven, Conn, and was professor of bacteriology at that university when ordered to active duty early in 1942. He graduated from Johns Hopkins University School of Medicine, Baltimore, in 1914, entered the medical reserve corps in 1915 and served throughout the World War. From May 1917 to March 1918 he was attached to the British Expeditionary Force in France and Italy and later with the American Expeditionary Forces in France and Germany. He has been decorated with the British Military Cross, the French Croix de Guerre and the Silver Star with two Oak Leaf Clusters.

SPECIAL HOSPITAL ESTABLISHED
TO TREAT BURNS

According to a recent report from Algiers, Lieut Col Edward A Krause, formerly of Washington, D C, has been named head of the special hospital established to treat burns received on the battle field, under the Army's new "selective hospitalization" plan. Col Edward D Churchill, former professor of surgery at Harvard University, Boston, and now on duty in Algiers, said that the new system whereby soldiers with special types of injuries are sent to special hospitals, such as that headed by Lieutenant Colonel Krause, had three large advantages. "Naturally the establishment of centers specifying the treatment of various types of casualties will render better service to the men wounded in battle. Second, these centers also will be educational centers where surgeons and specialists from other hospitals may observe techniques. Then too, technical data to check on the results of surgical management and point the way to improved methods can be assembled."

U S ARMY UTILIZING TALENTS OF
CHICAGO NEGRO DOCTORS

Many prominent Negro physicians from Chicago are looking after the health and battle care of Negro troops in United States camps and overseas. Fort Huachuca, which is located on the side of a mountain between Bisbee and Nogales, Ariz, and which is said to be the principal Negro training center in the country in the sense of providing finishing work with combat troops, is the home of some 20,000 Negro soldiers. There the 92d Division recently celebrated its first anniversary as an activated division. Lieut Col Median O Bousfield, former member of the Chicago Board of Education, is in command of the station hospital at Fort Huachuca, Major Harold W T

Fischer and Major Rocoe C. Giles, both of Chicago, are chief of the medical service and chief of the surgical division respectively. Many of the Negro nurses at Fort Huchuck are from Chicago, as are many of the girls in the WAC battalion there.

Major John B. West, former superintendent of Provident Hospital, Chicago, with thirty nurses commands a station hospital in North Africa. En route overseas is another Negro station hospital staff under the command of Major Hugh Simmons of Washington, D. C., with which group Capt. Arthur Thomas, former resident surgeon at Provident Hospital, Chicago, is also attached. Another Chicagoan, Major Harvey J. Whitfield, directs the medical detachment with the 365th Engineers at Camp Campbell, Ky.

FOURTH FERRYING GROUP BASE HOSPITAL

A new 150 bed military hospital, the Fourth Ferrying Group base hospital at the Municipal Airport, Memphis, Tenn., was activated without the usual ceremony on February 16 and since has been quietly administering to the medical needs of the air forces, ferrying group and other military personnel. The hospital is fully equipped to handle any case from a minor injury to a major surgical operation. Malaria and other tropical diseases contracted by men of the Fourth Ferrying Group during their operations in other parts of the world as well as communicable diseases are also treated there. A modern air conditioned laboratory, a full array of the newest dental and dental surgical equipment, an up to date pharmaceutical department and a medical supply warehouse are at the hospital. Both wards and individual rooms are available for patients. All pilots and crew members of this ferrying group on their return from foreign trips are examined at the hospital before going on rest leave. The entire army personnel of the Fourth Ferrying Group base is given specified immunization shots at specified intervals at the hospital. All pilots are given physical check-ups at regular intervals, and aviation cadets selected by the local Aviation Cadet Examining Board are given their army physical examination at the hospital.

The convalescent program, for men able to be up and about, is one of the outstanding features of the hospital. Each day they are given the opportunity of hearing speakers who are well versed in the various fields pertaining to the air forces, such as pilots who have returned from foreign trips. There are speakers from the outside who keep the men posted on world affairs. The Red Cross Gray Ladies arrange recreational programs, and there are movies and hiking for those men who are able. A day room for patients and enlisted personnel of the hospital is now in the process of construction, which will be equipped for recreational facilities and will also be used for religious services.

Major Lowell C. Smith is commanding officer of the hospital. Other medical officers include:

Capt. Alfred V. Mahoney, executive officer
Capt. Samuel Pritzker, chief of medicine
Capt. David W. Wallwork, chief of surgery
Lieut. Gerald Smith, attending surgeon
Capt. Francis M. Dougherty, flight surgeon
Capt. Eugene H. Bekampes, assistant flight surgeon
Capt. Henry Bernstein, assistant flight surgeon
Lieut. Meyer Leonard Kimmel, assistant flight surgeon
Lieut. Mark L. Beauchamp, chief eye, ear, nose and throat section
Capt. Maurice B. Furlong, ward officer and patients' convalescent program
Capt. Jacob David Weinberg, base industrial surgeon and ward surgeon
Lieut. Irvin L. Libecap, assistant chief of surgery
Capt. Samuel M. Klaristenfeld, base medical inspector

LIEUT. COL. W. R. LOVELACE AWARDED DISTINGUISHED FLYING CROSS

Lieut. Col. W. R. Lovelace, chief of the aeromedical unit at Dayton Field, Ohio, has been awarded the Distinguished Flying Cross for heroism beyond the call of duty in recognition of his record altitude jump to test oxygen equipment during the parachute descent. The cross was presented in Washington, D. C., October 20, by Gen. H. H. Arnold, commander of the United States Air Forces.

SEMINOLE COMMISSIONED U. S. ARMY HOSPITAL SHIP

The War Department announced on October 22 the commissioning of the United States Army hospital ship *Seminole*. The vessel has been painted white with a green band and red crosses and it travels alone, fully lighted. It has no armor or armament. The vessel, a former combination freight and passenger ship, is 402 feet long and has a gross tonnage of 5,896 and a net tonnage of 3,514. It was converted by the Transportation Corps of the Army Service Forces. It contains 284 beds for bed type patients and 182 beds for patients able to move about their quarters. The ship is staffed by fifteen medical officers, thirty nurses and eighty-one medical attendants. In addition it has a navy crew. The commanding medical officer is ship commander, but navigation is under command of a naval officer. There are two other hospital ships in operation by the Army, the *Acadia* and the *Shamrock*. Hungarian, Bulgarian, Rumanian, German and Japanese governments have been notified that the *Seminole* is a hospital ship, entitled to immunity and protection under the terms of the Hague Convention X, 1907.

LIEUT. COL. PRESTON WHITE AND LIEUT. COL. PAUL SANGER CITED

Citations were presented by the Forty and Eight Voiture to Lieut. Col. Preston White and Lieut. Col. Paul Sanger, both formerly of Charlotte, N. C., as organizers of the 38th Evacuation Hospital Unit, who are overseas serving in North Africa. The formal presentation was made to the wives of Lieutenant Colonel White and Lieutenant Colonel Sanger by Dr. Addison G. Brenizer of Charlotte, who organized a local hospital unit in World War I and who has also been cited by the Forty and Eight Voiture for his recent efforts in organizing Base Hospital No. 111 and securing thirty-five nurses for Base Hospital No. 106.

OFFICERS GRADUATE AT MEDICAL FIELD SERVICE SCHOOL

Graduation exercises were held at the Medical Field Service School, Carlisle Barracks, Pennsylvania, for 344 more officers of the medical department who are now qualified for field duty with troops. The training course taught them the military knowledge necessary for them to be efficient medical department officers, capable of carrying out medical preventive measures and caring for the sick and injured under war conditions. Brig. Gen. Addison D. Davis, commandant of the school, presented the diplomas to the officers.

CAPT. PAUL D. HAHN AWARDED PURPLE HEART

Capt. Paul D. Hahn, Warsaw, Ohio, has been awarded the Purple Heart medal. He received shrapnel wounds in Sicily, according to an item published in the Uhrichsville (Ohio) *Chronicle* of September 24. Captain Hahn was wounded on July 11 in the Gala salient while he was giving first aid to two wounded U. S. soldiers in an evacuation area. The officer and the two men were cut off from their lines for six hours before they were rescued, following a counterattack by a German tank unit.

PRISONERS OF WAR

It has recently been reported that Capt. Alvin C. Poweleit, formerly of Newport, Ky., is a prisoner of the Japanese in the Philippines. Captain Poweleit graduated from the University of Louisville School of Medicine in 1936 and entered the service March 26, 1941.

First Lieut. Thomas Edward Corcoran, formerly of Rock Rapids, Iowa, was taken prisoner of war in Tunisia, Feb. 17, 1943, according to a recent report. Lieutenant Corcoran graduated from the University of Iowa College of Medicine, Iowa City, in 1938 and entered the service Feb. 12, 1941.

MISCELLANEOUS

TRANSPORTATION DIFFICULTIES HAMPER
REMOVAL OF GERMAN WOUNDED

Oberfeldarzt Dr. Wolff in the *Berliner Borsen-Zeitung* of August 28, in writing on the work of the army medical service, said that for the wounded it is a long road from the moment they are wounded at the front to their arrival at a military hospital in the homeland. The wide spaces of the east, the shortage of railway lines and good transport roads, all the circumstances of a sparsely populated and little civilized country make themselves felt here in the most aggravating manner. The removal of the wounded has become one of the hardest problems of this war. Munitions, provisions and material for the armies of millions are pouring to the front on an enormous scale. The outcome of heavy, decisive battles depends on the timely arrival of the supply trains. The few available railway lines are taxed beyond their capacity. Hospital trains? In order to let them through, the necessary supply trains, so urgent for the front, would have to be held up somewhere or other. The transport of wounded by aircraft? The number of those who could pilot the planes is limited on the whole, and above all the technical and tactical preconditions for the employment of aircraft and for the landing and starting of the planes would have to be fulfilled. Motor ambulances? Their carrying capacity is even more limited, and they too are used in the first place at the front itself to transport the wounded to the main dressing centers and the field hospitals. It is not possible to release ambulances for long journeys on the worst possible roads. In these circumstances quite exceptional situations arise for our medical officers, difficulties of organization which are added to their medical and military duties. The obstacles, so it often appears, are insurmountable. But they must be mastered and they are mastered too, often by emergency solutions by means of improvised hospital trains which are established in goods vans (only part of the ordinary passenger carriages are suitable for accommodating stretcher

cases) and which cannot offer the wounded all the comfort and conveniences they deserve. But there is nothing for it, and the wounded are front soldiers, accustomed to discomfort and inconveniences. The chief object is achieved, however, the wounded are transported back home.

NERVOUS DISORDERS WIDESPREAD
IN GERMANY

The *Leipziger Neueste Nachrichten* of August 23 states that nowadays the homeland is greatly in need of the nerve specialist. It is a question not so much of serious organic diseases of the nervous system but of the host of so-called nervous disorders which, although they do not endanger life, may have the most serious effect on the well-being, happiness, working capacity and performance of men. In wartime all are subject to heavy burdens. More work has to be done on less food. The hours of sleep are cut and the night's rest is disturbed. Frequently housing conditions are unfavorable and long distances have to be covered in overcrowded means of transport. Families are torn apart. Added to all this are the excitement, worries, mourning and uncertainty about the fate of one's dear ones. Even strong characters are not always equal to such a burden and weaker ones lose their power of resistance and break down. Not every one is capable of withstanding the terror air attacks. No one who does not live in a raided district can have any idea of how horrible an experience it is or of how much firmness and courage are needed to get through a heavy attack. The detonation of the bombs and mines, the collapse of houses, the cries of the wounded and trapped, the fires and the constant danger to life to which every one is exposed in helpless expectation strain one's nerves to the utmost. It is easy to understand that the wounded and trapped who save nothing but their bare lives, whose nearest and dearest are missing and who see themselves surrounded by death and mutilation, fire and devastation suffer a nervous collapse.

ORGANIZATION SECTION

1944 ANNUAL SESSION TO BE HELD IN CHICAGO

Because of information received that it will not be possible for St. Louis to provide adequate hotel accommodations, the annual session of the American Medical Association in 1944, which had been scheduled to be held in St. Louis, has been changed by the Board of Trustees so that it will now be held in Chicago, June 12 to 16.

The meetings of the House of Delegates will be held at the Palmer House and the Scientific Exhibit will be installed in

that hotel. The Technical Exposition will be housed at the Stevens Hotel.

The Council on Scientific Assembly will meet at the offices of the Association in Chicago on December 1 and the Annual Conference of Section Secretaries with the Council will be held on that day for the purpose of making preliminary arrangements for the scientific program to be presented at the next annual session.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—S. 400 has been reported to and passed by the House, proposing to reorganize the United States Public Health Service. It retains the provision under which for the duration of the present war and for six months thereafter graduates of reputable colleges of osteopathy shall be eligible for appointment "as reserve officers in the Public Health Service." S. 763 has passed the Senate and House, proposing to amend the Selective Training and Service Act of 1940. Among other things, this bill directs the President to appoint a commission of five qualified physicians, one of whom only shall be an Army officer and one only a Naval officer, and the three remaining members qualified physicians not in the employ of the federal government to examine the physical qualifications for admission to the Army, Navy and Marine Corps and recommend to the President any changes therein

which it believes can be made without impairing the efficiency of the armed services. H. Res. 328 was reported unfavorably by the House Committee on Military Affairs, proposing to request the President to furnish the House of Representatives certain information with respect to the availability of hospital facilities in the United States. The House after receiving the report of the committee tabled the resolution.

Bills Introduced—H. R. 3530, introduced by Representative King, California, proposes to authorize the construction and extension of certain marine hospitals in Alabama, California, Florida, Illinois, Louisiana, Maine, Maryland, Massachusetts, Michigan, New Mexico, New York, Ohio, Pennsylvania, Texas, Virginia and Washington. H. R. 3542, introduced, by request by Representative Rankin, Mississippi, proposes to provide for the rehabilitation of certain disabled veterans who served between Sept. 16, 1940 and Dec. 7, 1941.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATIVE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Physicians Needed—The Los Angeles County Civil Service Commission announces examinations for the position of head anesthetist in the Los Angeles County Hospital and for the position of head pathologist at the Olive View Sanatorium, Olive View. Applicants for both positions must have graduated with an M.D. degree from an approved medical school and must have completed a one year internship in an approved hospital. In addition to these requirements, applicants for the head anesthetist position must have at least two years' recent experience in the specialty of anesthesia in a hospital of not less than 200 beds. There is no age requirement. The examination for this "duration of war" position paying from \$345 to \$411 a month will be held in Los Angeles and such other localities as justified by the applications filed. Applicants for the \$345-\$411 a month position of head pathologist must be under 55 years of age and in addition to the educational requirements, must have at least two years' recent experience as a specialist in clinical pathology some of which must have been in a responsible, administrative and executive capacity. Full information and applications for either of these positions may be obtained from the office of the commission Room 102 Hall of Records, Los Angeles 12. Applications must be filed on or before November 17.

Annual Symposium on the Heart—The thirteenth annual symposium of the Los Angeles Heart Association will be held in Los Angeles, November 11-12. Dr. Tinsley R. Harrison, professor of medicine, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C., will be the guest speaker, discussing "The Abuse of Rest in the Treatment of Cardiovascular Disease" and "The Differential Diagnosis of Palpitation." Dr. Harrison will conduct a clinical-pathologic conference and a cardiac clinic. Included among the speakers will be

- Dr. William Gordon Garnett Los Angeles The Practical Management of Patients with Hypertension.
- Dr. Samuel J. McClelland San Diego The Diagnosis of Rheumatic Fever in Children
- Dr. Wilbur A. Beckett Los Angeles On the Importance of Speaking One Heart Language.
- Dr. Francis M. Smith La Jolla The Importance of Salt and Fluids in the Treatment of Congestive Heart Failure
- Major Maurice Eliazer Jr. M. R. C. Cardiovascular Disease in an Army General Hospital
- Dr. Leon G. Campbell Pasadena The Treatment of Cerebral Vascular Accidents.
- Dr. Donald E. Griggs, Los Angeles The Critical Diagnosis of Angina Pectoris.
- Dr. Edward C. Rosenow Jr. Pasadena The Importance of the Electrocardiogram in Coronary Artery Disease
- Dr. Wilbur Bailey Los Angeles The Place of the Radiologist in the Diagnosis and Treatment of Heart Disease
- Dr. William J. Kerr San Francisco One Thousand Draft Rejections for Cardiovascular Conditions
- Dr. Howard F. West Los Angeles Nutritional Considerations in Heart Disease
- Dr. C. Russell Anderson Los Angeles The Treatment of Cardiovascular Syphilis
- Dr. Kendrick A. Smith Los Angeles The Patient with Diabetes and Heart Disease.
- Dr. John Philip Sampson Santa Monica The Need for Conservatism in the Treatment of Acute Coronary Occlusion

Course at California to Meet Latin American Needs—The University of California will begin on March 1, 1944 a special course in health education to meet the particular requirements of students from the other American countries. Students will be urged, however, to commence their studies not later than December 10 to give time for those who require training in English to secure the necessary instruction. The course in English will be planned to deal with the vocabulary which will be used in the later course in health education and will also serve as an orientation course. The health education course will be given in the School of Public Health now being established and will include training in the principles of public health and hygiene principles of education and methods, materials and techniques in health education particularly as they apply to conditions in the other republics. Arrangements are being made to appoint one or more experienced public health administrators from the other republics to serve temporarily on the faculty. The class for 1944 will be limited to thirty students. All applicants must give evidence of their intention to undertake service

in public health or in school health work in Latin America after completion of the course. Classroom instruction will be given on the campus at Berkeley, after which there will be supervised field training. Candidates need not be physicians, but persons with prior training or experience in public health work, school health education and related fields will be given preference. Students who are selected for this training by the Institute of Inter-American Affairs will receive monthly stipends adequate to meet their living costs and will be furnished with tuition and transportation from their residence to the University of California and return. All applications will be made through chiefs of party of the Office of the Coordinator of Inter-American Affairs in each republic in accordance with regulations governing the institute training program. Following is a list of the chiefs of party, who should be addressed in care of the American embassy in the respective republics.

- Dr. George C. Bergman La Paz, Bolivia
- Major Einar H. Christopherson M. C. A. U. S., Rio de Janeiro, Brazil
- Dr. Howard B. Shookhoff Bogota Colombia
- Dr. David Glusker San Jose Costa Rica
- Dr. Theodore I. Gandy, Santiago Chile
- Dr. Thomas B. Phinizy Ciudad Trujillo, Dominican Republic.
- Lieut. Wyman R. Stone Quito Ecuador
- Lieut. Col. H. R. Van Hovenberg, San Salvador El Salvador
- Dr. Robert L. Vought, Guatemala City Guatemala
- Mr. Ralph S. Howard Jr., Port au Prince, Haiti.
- Dr. Isaac Frank Tullis Jr. Tegucigalpa, Honduras.
- Dr. E. Harold Hinman, Mexico D. F., Mexico
- Dr. Leonard S. Rosenfeld Managua, Nicaragua
- Mr. Howard D. Schmidt Panama City, Panama
- Dr. Richard J. Plunkett Asuncion, Paraguay
- Dr. Edward A. Westphal Lima Peru
- Lieut. Col. Ernest W. Steel Caracas, Venezuela

In other countries, information regarding the course may be secured from the Pan American Sanitary Bureau.

DISTRICT OF COLUMBIA

Personal—Dr. Ludwig G. Lederer, acting chief of the medical department of the Pennsylvania-Central Airlines, has been appointed director of the department.—Mr. John A. Linder, Perth Amboy, N. J., has been appointed superintendent of Doctors Hospital, succeeding Mr. O. K. Fike, who resigned to become director of the Miami Valley Hospital at Dayton, Ohio.

Special Meeting on Ophthalmology—On December 4 the department of ophthalmology at George Washington University School of Medicine will hold its semiannual meeting, to which all members of the armed forces are invited. The following case demonstrations will be conducted by members of the staff of the department of ophthalmology.

- Drs. William T. Davis and Ernest A. W. Sheppard Anomalies of the Disks
- Dr. Edgar Leonard Goodman Pemphigus Conjunctivae
- Dr. Ronald A. Cox Bilateral Amblyopia Following Crushed Chest.
- Dr. Frank D. Costenbader Retinal Detachment in Childhood
- Dr. Richard W. Wilkinson Foreign Body in Cataractous Lens Located by Vogt X-Ray Technique
- Dr. Sterling Bockoven Melanoma of the Choroid
- Dr. Carmon R. Naples Hypertensive Retinopathy

Col. Frederic H. Thorne, M. C., U. S. Army, will discuss "Military Aspects of Ophthalmology" and Dr. Davis, professor of ophthalmology at the medical school, will give an illustrated address on "Differential Diagnosis of the Vertical Motor Anomalies."

IDAHO

State Medical Election—Dr. Willard O. Clark, Lewiston, was chosen president-elect of the Idaho State Medical Association and Dr. Parley Nelson, Rexburg, was installed as president. Dr. Franklin B. Jeppesen, Boise, is secretary of the group.

ILLINOIS

Campaign Against Bang's Disease—A campaign to eradicate Bang's disease has been begun in Lake County. The Lake County board of supervisors voted funds for the project, and state and federal authorities are cooperating in the program, in which every cow will be tested and all dairy calves between 4 and 8 months old vaccinated. Farmers will receive compensation for any reacting cows disposed of through market channels.

Program to Develop Adequate Health Protection in Schools—Health and education officials of the state announced the launching of a program for the development of more adequate health protection in schools throughout Illinois to include a detailed scientific study of school health problems, with the consultant services of Clair E. Turner, Dr. P. H. professor of biology and public health, Massachusetts Institute of Technology, Cambridge, Mass. Preliminary meetings were held in Springfield on October 26 and in Chicago on October 29 to consider the program.

Chicago

University News—Dr Jacob Meyer, associate professor of medicine, has been promoted to professor of medicine at the University of Illinois College of Medicine, effective September 1. Dr Meyer graduated at Rush Medical College in 1916.

The Belfield Memorial Lecture—Dr George F Cahill, professor of urology, Columbia University College of Physicians and Surgeons, New York, delivered the fifteenth annual William T Belfield Memorial Lecture before the Chicago Urological Society on October 28. His subject was "Hormonal Tumors of the Adrenals."

New Members of Medical Center Commission—New members appointed by Governor Green to serve on the medical center commission include George A Barr, Joliet, David H Brill, Albert D Farwell and Dr Raymond B Allen, all of Chicago. The commission is working on the development of a medical center on Chicago's west side. The new members of the commission will take office in December.

INDIANA

Kellogg Grant for Medical Technologists—The W K Kellogg Foundation, Battle Creek, Mich., has granted \$4,000 to Butler University, Indianapolis, to be used for loans and scholarships in training medical technologists. Following the two to four year preclinical training program at Butler, clinical work is done either at the medical center at Indiana University School of Medicine or at the Methodist Hospital, Indianapolis.

KENTUCKY

State Medical Election—Dr Oscar O Miller, Louisville, was named president-elect of the Kentucky State Medical Association at its annual meeting in Louisville on October 6 and Dr Van A Stille, Benton, was installed as president. New vice presidents include Drs J Watts Stovall, Grayson, James H Pritchett, Louisville, and William Howe Fuller, Mayfield. Dr Philip E Blackerby, Louisville, state health commissioner, was elected secretary of the association and Dr Amphas W Davis, Madisonville, was reelected treasurer. During the meeting the house of delegates chose Dr Thomas Atchison Frazer, Marion, as the 'outstanding general practitioner of Kentucky.'

MARYLAND

Personal—Dr Guy B Anderson, Ellicott City, has resigned as health officer of Howard County. After some special study at the Mayo Clinic, Rochester, Minn., Dr Anderson plans to return to private practice.

Roscoe R Hyde Dies—Roscoe Raymond Hyde, Ph D, professor of immunology and director of laboratories of filtrable viruses since 1932 at Johns Hopkins University School of Hygiene and Public Health, died at Baltimore on September 15. Dr Hyde graduated at the Indiana State Teachers College, Terre Haute, in 1908, receiving his A M and A B degrees in 1909 and his Ph D degree at Columbia University in 1913. He was assistant in embryology at Indiana University, Bloomington, in 1908-1909, assistant professor and later professor and head of the department of zoology and physiology at Indiana Teachers College, serving as lecturer in pathology at the Terre Haute Veterinary College from 1912 to 1919. Joining Johns Hopkins as a fellow in 1918 he subsequently served as associate, associate professor of immunology from 1928 to 1932, and as associate professor of filtrable viruses and head of the department. He was editor of the *American Journal of Hygiene* from 1927 to 1932. Dr Hyde had been a member of numerous scientific organizations and had written extensively in his field.

MICHIGAN

Inter-American Conference of Schools of Public Health—The Pan American Sanitary Bureau, in cooperation with the Association of Schools of Public Health of the United States and Canada and the W K Kellogg Foundation, has called a conference of representatives of the schools of public health in the South, Central and North American countries. The conference will be held in the new School of Public Health of the University of Michigan, Ann Arbor, for four days beginning November 8. In attendance will be representatives from the schools of public health at Harvard, Boston, Yale, New Haven, Conn., Johns Hopkins, Baltimore, Columbia, New York, University of North Carolina, Chapel Hill, University of Toronto, Vanderbilt University, Nashville, Tenn., University of Minnesota, Minneapolis, and University of Michigan, together with representatives from the Rockefeller Foundation,

the W K Kellogg Foundation, the Commonwealth Fund, and Office of the Coordinator of Inter-American Affairs, the Department of State, the Pan American Sanitary Bureau and the U S Public Health Service. Thomas Parran, surgeon general of the U S Public Health Service, will discuss "The Service of the Public Health Schools to the Nation's Health" and Charles-Edward A Winslow, Dr P H, New Haven, Conn., "The Fruits of Inter-American Relations in the Field of Public Health." At one session the education of public health personnel in Mexico, Central and South American countries will be discussed by

Dr Alberto Zwaneck, professor of hygiene, University of Buenos Aires Medical School, Argentina.

Dr G H Paula Souza, director, School of Hygiene, University of São Paulo, Brazil.

Dr Herman Romero, professor of hygiene, University of Chile Faculty of Medicine, Santiago.

Dr Mario Prado-Lefort, acting director of the Bacteriologic Institute, Santiago.

Dr Ortelio Martinez Fortun, professor of hygiene, Havana Medical School, Cuba.

Dr Miguel E Bustamante, professor of hygiene, Mexico, D F.

Dr Carlos Enrique Paz Soldán, professor of hygiene, Medical School, University of Lima Faculty of Medicine, San Marcos, Peru.

Dr Federico J Salveraglio, assistant professor of hygiene at the University of Montevideo Faculty of Medicine, Uruguay.

On Wednesday and Thursday the meetings will be limited to a working committee to consist of one representative from each of the schools of public health and one from each of the interested cooperating agencies. The conference will limit its discussions to the needs of students who aspire to a professional career in the field of public health.

MINNESOTA

Medical Panel for Workmen's Compensation Cases—Governor Thye recently appointed fifteen physicians to serve on a medical panel provided by the last legislature to help decide medical questions arising in workmen's compensation cases. The physicians are Drs John R Aurelius, Carl B Drake and Francis W Lynch, St Paul, Harold R Tregilgas, South St Paul, Robert G Ahlson, Jay A Myers and Viktor O Wilson, Minneapolis, Frank J Elias and John R McNutt, Duluth, Willis S Lemon and Charles G Sutherland, Rochester, Albert J Wentworth, Mankato, Warren E Wilson, Northfield, Bertram S Adams, Hibbing, and Berton J Branton, Willmar. The law provides that in case a claim involving controversial medical questions is allowed by the commission after the taking of testimony a medical board of three physicians from the panel of fifteen shall be chosen to act in the case. The panel includes ten physicians with experience in the diagnosis and treatment of industrial diseases and five x-ray specialists.

MONTANA

Personal—Dr Lunsford D Tricks has resigned as health officer of Helena and Lewis and Clark County because of poor health. His resignation was effective August 31. —Dr F Martin Larson, Great Falls, was reelected president of the Montana Tuberculosis Association at its annual meeting, September 11. Mrs Henriette Crockett, Helena, is executive secretary. —Dr Charles J Bresee, Great Falls, has been appointed a member of the Montana Department of Public Health succeeding Dr George F Turman, Missoula, and Dr Richard C Monahan, Butte, has been named to succeed the late Dr Enoch M Porter, Great Falls.

NEW YORK

Cancer Programs—November 10 has been designated a cancer teaching day in Poughkeepsie, the program to be under the auspices of the Dutchess County Medical Society, the Dutchess County Tumor Clinic and the Tumor Clinic Association of the State of New York. The speakers will be Drs Norman Treves, New York, on "The Management of the Patient with Advanced Cancer", Arthur J Wallingford Albany, "Cancer of the Uterus," and Maurice Lenz, New York, "The Treatment of Carcinoma of the Larynx." An evening session will be addressed by Drs Lloyd F Craver and Archie L Dean New York, on "The Significance of Enlarged Lymph Nodes" and "Carcinoma of the Genitourinary Tract" respectively. A cancer evening will be held at Olean November 11, under the auspices of the Cattaraugus County Medical Society with Dr Craver, on "The Role of the General Practitioner in the Early Diagnosis of Cancer" and Dr Clyde L Randall Buffalo on "The Significance and Management of Abnormal Vaginal Bleeding" as the speakers. The state medical society and the division of cancer control of the state department of health are sponsoring these programs.

New York City

Information Center on Alcoholism—The Research Council on the Problems of Alcohol, now located in Bronxville, N. Y., plans to open a New York Information Center to be located in the Grand Central district for information, without charge, regarding alcoholism and its treatment to alcoholic addicts and to all persons who have a problem connected with the use of alcohol. Family doctors, employers, clergymen, representatives of social agencies, educators and other civic leaders will be welcome at the center. A qualified man and woman will be on duty to provide information and lists of hospitals, and private practitioners competent to treat alcoholism will be available. The council is also planning to move its office to New York.

Blood and Plasma Bank Established—The Blood Transfusion Association, formerly the Blood Transfusion Betterment Association, announces the establishment of a blood and dried plasma bank. Connected with the association's laboratory, the blood and dried plasma supply service is placed at the disposal of the community on an exchange basis and is available to hospitals as well as to individual physicians and welfare groups. The association will also continue its blood donor bureau service and continue to support blood research work in the field of transfusion and in the preventive application of the Rh factor in the blood transfusion of pregnant women. The laboratory and office of the Blood Transfusion Association provide twenty-four hour service at 2 West 106th Street.

Department of Tropical Medicine Created at Columbia—The establishment of a department in tropical medicine at Columbia-Presbyterian Medical Center has been announced. Dr. Harold W. Brown has resigned as dean of the School of Public Health of the University of North Carolina, Chapel Hill, effective January 1 to become the professor of parasitology under the new setup. He is also the first member of the faculty for training and research in tropical diseases which will function under the immediate direction of the DeLamar Institute of Public Health, a division of the medical school. The project was made possible by a grant of \$150,000 from the Josiah Macy Jr. Foundation, which will also defray a concentrated five year program of research and teaching at the medical center (THE JOURNAL, Jan. 23, 1943, p. 271).

NORTH CAROLINA

New Division of Local Administration—The North Carolina State Board of Health has created a division of local administration and divided the state into three districts as a part of the general reorganization of the board. The directors of the districts will be Drs. Joseph C. Knox, Raleigh, district 1, Robert E. Fox, Raleigh, district 2 and John Roy Hege, Winston-Salem, district 3. Because of the emphasis being placed on venereal disease control during the years preceding the war, and especially during this war period, it has been deemed advisable to consolidate all administrative activities pertaining to the cooperative working relationship between the state board of health and local health units, including venereal diseases, in the new division of local administration. Each district director will have under his immediate supervision certain personnel and services now provided by the state board of health, consisting of a senior public health physician in venereal disease control, consultant public health nurses, a sanitary engineer, sanitary inspectors and public health educators. For the time being a skeleton organization of the present division of county health work will be retained in the division of local administration. An acting director of epidemiology will be responsible for the work of the division of epidemiology excluding venereal diseases. The office of personnel officer has been created to handle all questions between the state and local health units and the merit system council.

OHIO

Hospital News—The medical library of the late Dr. Orr A. Dickson, Jefferson, has been presented to the Ashtabula General Hospital, Ashtabula. The collection consists of six hundred volumes with publication dates running from 1896 to 1942.

Food Handlers to Be X-Rayed—The Gallia County Tuberculosis and Health Association is urging all food handlers, all employees of food handlers and all owners of food establishments to request their employees to be tuberculin tested by the public health nurses. The association plans to bear the expense of this program and will urge all positive reactors to be x-rayed. All persons complying with this offer and found

to be free from communicable tuberculosis will be given health certificates. The Gallia County Association is said to be the first association in Ohio to inaugurate a testing program for food handlers, according to the *Bulletin* of the National Tuberculosis Association.

RHODE ISLAND

President of State Society Honored—Physicians and civic leaders from the Newport area gave a dinner recently in honor of Dr. Michael H. Sullivan, newly elected president of the Rhode Island Medical Society. Dr. Norman M. MacLeod, Newport, formerly president of the state society, was toastmaster at the dinner, at which Dr. Sullivan was presented with an electric clock. Speakers included Superior Court Judge Mortimer A. Sullivan, Cornelius C. Moore, president of the city council, and Dr. Elihu S. Wing, Providence, president-elect of the state society.

Internship Reduction Disapproved by State Board—The Rhode Island Board of Examiners in Medicine announced that it does not approve a decrease in hospital internship from twelve to nine months for the duration of the war. At a recent meeting the board voted "that the licensing authority in this state would expect subsequent service in an army or navy station, field or general hospital for those physicians who were compelled by the military authorities to leave their regular internships after nine months of service. Physicians who are physically disqualified and who therefore do not enter the armed forces will be required to complete their usual twelve months of rotating internship." The board feels that this action will meet the military purpose of the proposal to reduce the internship without lowering the standards for licensure.

WASHINGTON

State Medical Election—Dr. Raymond L. Zech, Seattle, was named president-elect of the Washington State Medical Association at its annual meeting in September and Dr. Vernon W. Spickard, Seattle, was inducted into the presidency. Dr. Herbert E. Coe, Seattle, was chosen vice president.

Hospital News—Plans are going forward to construct the Doctors Hospital in Seattle at a cost of \$800,000. It will have 200 beds and will be sponsored by the King County Medical Service Corporation. The Franklin Delano Roosevelt Hospital at Bremerton has been built at a cost of \$986,000. The hospital was financed by the Federal Works Agency and was expected to be opened for patients on November 1.

Immunization Program—The Tacoma City Health Department and Pierce County Medical Society are cooperating in a community immunization program against diphtheria, smallpox and whooping cough. The decision to launch this program followed a request from the Tacoma housing authority to the health department for immunization services in the Salishan and Lincoln Heights areas. A survey showed that the number of children immunized was not enough to prevent occurrence of these diseases in epidemic proportions. The new program recommends that the family physician should encourage immunization of his own patients. It will include mass immunization clinics at the Salishan and Lincoln Heights areas by the city health department, with the department giving special emphasis to the promotion of immunization by the family physician in news releases.

WISCONSIN

Personal—Dr. William C. Keettel Jr., Madison, obstetric consultant for the Wisconsin State Board of Health, has been granted a leave of absence for service with the U. S.-War Department. He has been assigned to a special project in Knoxville, Tenn., as chief of the division of obstetrics and gynecology, the *Quarterly Bulletin* of the state board of health reports.

State Medical Election—Dr. Charles Fidler, Milwaukee, was chosen president-elect of the State Medical Society of Wisconsin at its annual meeting in September and Dr. Russell M. Kurten, Racine, was installed as president. Mr. Charles H. Crownhart, Madison, is the executive secretary of the society. At the meeting Dr. Cornelius A. Harper, Madison, who recently retired as state health officer after many years of service, was presented with a scroll of appreciation in acknowledgment of his services.

HAWAII

Personal—Oscar N. Allen, Ph.D., professor of bacteriology and a former chairman of the department of botany at the University of Hawaii, Honolulu, has recently been named chairman of the newly established department of bacteriology according to Science.

GENERAL

Dr MacEachern Named Chairman of Council on International Relations—Dr Malcolm T MacEachern, Chicago, associate director of the American College of Surgeons, was named chairman of the Council on International Relations created by the forty-fifth annual convention of the American Hospital Association in Buffalo, September 12. The council will cooperate with Nelson Rockefeller, coordinator of the Office of Inter-American Affairs, and plans to assist in maintaining reciprocal relations with all hospital groups in the world (THE JOURNAL, September 25, p 225)

Russian War Relief Requests Books—Dr Vladimir Lebedenko has requested the Russian War Relief, Inc., 11 East 35th Street, New York 16, to secure for Russian physicians a considerable number of medical textbooks, reference works and periodicals. Soviet institutions, according to Dr Lebedenko, are training two and one half times as many physicians as before the war. The shortage of paper and other material has greatly reduced Russia's own publishing activities. Physicians who wish to contribute books may request a copy of the list by writing directly to the Russian War Relief.

American Therapeutic Society—The American Therapeutic Society will meet on November 15 at the Netherland Plaza Hotel, Cincinnati. Speakers will include

Dr Francis M Pottenger Jr, Monrovia, Calif., The Therapeutic Value of Fats Particularly the Lecithins, in Dermatoses
Dr Abram Wilbur Duryee, New York, Vitamin C and Shock Results of Recent Research Studies
Dr Edwin C Hamblen, Durham, N C, Experience with Gonadotropic Therapy in Sterility
Dr Joseph B Wolfe, Philadelphia, Renal Artery Thrombosis Its Clinical Recognition and Management
Col Neely C Mashburn M C, U S Army, Development of Aviation Medicine in the United States

Dr Walter E Vest, Huntington, W Va, will deliver his presidential address on "William Shakespeare, Therapist," at the annual banquet Monday evening.

Industrial Hygiene Meeting—The eighth annual meeting of the Industrial Hygiene Foundation will be held at the Mellon Institute, Pittsburgh, November 10-11. Included among the speakers will be

Charles F Kettering, Dr Engring, Dayton, Ohio subject not announced

Dr Charles F Kutscher Pittsburgh, How the Inhalation of Some Chemicals Affects the Eye

Lieut Col William J McConnell, M C, A U S Surg Robert H Flinn, U S Public Health Service, and Lieut Col Raymond Hussey, M C, A U S, Recent Data on Health Hazards in War Industries

Dr Robert A Kehoe and Edward J Largent, Cincinnati, Fluorides as an Industrial Health Problem

Dr Oscar A Sander, Milwaukee, Further Observations on Lung Changes in Electric Arc Welders

Drs Leroy U Gardner and George W Wright, Saranac Lake, N Y, Progress Report on a Study of Disability in Silicotics

Dr Clarence O Sappington, Chicago, Health Problems of Women in Industry

Dr Edward J Stuehlitz, Washington, D C, Health Problems of the Older Employee and Employer

William M Gafafer, Dr Sc, Bethesda, Md, Reducing Manpower Losses

Philip Drinker Ch E, Boston, Control of Health Hazards in Ship Building, Including Welding

Francis R Holden, Ph D, and W C L Hemeon, M S, Pittsburgh, Report on High Points of Foundation Plant Surveys

Lieut Col Theodore F Hatch, S C, Fort Knox, Ky, Physiologic Effects of Heat

Allen D Brandt, D Sc, sanitary engineer, U S Public Health Service, Application of Engineering Control Measures in Munitions Plant

Theodore C Waters lawyer, Baltimore, Legal Developments in 1943 Respecting Industrial Health

Almon E Roth Washington, D C, Healthful Working Conditions Improve Labor Relations

Proposed School of Physical Therapy—A committee has been named to survey the field of physical therapy and to submit recommendations for the establishment of an institution of physical therapy for the study and teaching of the subject. The work will be financed with a grant of \$25,000 from Bernard M Baruch, New York, who has been interested in the subject for many years and who wishes to set up such a project as a memorial to his father, the late Dr Simon Baruch, professor of hydrotherapy, Columbia University College of Physicians and Surgeons, New York. Dr Ray Lyman Wilbur, chancellor of Stanford University, has been named chairman of the committee, other members of which include Drs Kristian G Hansson, medical director of the Physical Therapy School at the Hospital for Special Surgery, New York, Carl R Comstock, Saratoga Springs, N Y, Benjamin A Strickland Jr, lieutenant colonel, M C, U S Army, Tucson, Ariz, Charles F Behrens, commander (MC), U S Navy, head of the x-ray department, Naval Medical Center, Bethesda, Md, John S Coulter, medical director of the Physical Therapy School at

Northwestern University, Chicago, Dr Frank H Krusen, medical director of the Mayo Clinic Department and School of Physical Therapy, Rochester, Minn, and William T Sanger, LL D, president of the Medical College of Virginia, Richmond.

Southern Medical Association—On November 16-18 the Southern Medical Association will hold its annual session in Cincinnati at the Netherland Plaza Hotel, with the Campbell-Kenton County Medical Society of Kentucky and the Academy of Medicine of Cincinnati acting as hosts. This is the first time the Southern Medical Association has met north of the Mason-Dixon Line. At a general public session Tuesday night Dr Tom D Spies, Birmingham, Ala, and Cincinnati, will be presented with the Research Medal of the association "in recognition of his outstanding contributions to our knowledge of the science of human nutrition, especially in his elucidation of the earlier and better methods of diagnosis and treatment of disease." Other speakers at this session will include Dr Harvey F Garrison, Jackson, Miss, president of the association, on "The Nation's Most Valuable Asset and Its Greatest Problem." The general program includes the following speakers:

Norman T Kirk, surgeon general of the U S Army, The Care of Battle Casualties and the Casual Sick

Dr James E Paulin, Atlanta, Ga, President, American Medical Association, The Future of American Medicine

Dr James W Bruce Louisville Free Diet in Juvenile Diabetes

Dr L Wallace Frank, Louisville, Surgical Treatment of Cancer of Uterine Body in the Obese

Dr Walter Dean, Louisville, Otitis Media Still Takes Its Toll

Dr William A Altemeier, Cincinnati, Penicillin in Surgery

Dr S Spafford Ackerly, Louisville, Is There An Anxiety Component of Every Complaint?

Dr Nathan Chandler Foot, New York, Glandular Metaplasia of the Epithelium of the Urinary Tract

Comdr Edward L Bortz (MC), U S Naval Reserve, New Horizons in Medicine

Dr Bernard H Nichols, Cleveland, The Elevation of Excretory Urography in General Practice

Major Archibald Fine and Lieut. Theodore B Steinhausen, M C A U S, Chest Lesions in Ninety Thousand Prospective Aviation Cadets

Drs Hugo T Engelhardt and Vincent deP J Derbes, New Orleans, Allergy to Liver Extract

Thomas Parran, surgeon general, U S Public Health Service, Health Problems Ahead

Dr Louis A Buie Rochester, Minn, Jeep Disease (Pilonidal Disease of Mechanized Warfare)

Dr Harold H Kuhn, Durham, N C, Degenerative Fibrosis with Neuromatous Proliferation of Plantar Nerve (Morton's Metatarsalgia)

Dr Paul H Holinger Chicago, Post Thyroidectomy Laryngeal Paralysis Medical and Surgical Aspects

Dr Edward H Cary, Dallas, Texas, Ocular Headaches

The section on medical education and hospital training will offer the following program on Tuesday:

Dr Frank R Bradley, St Louis, Education of the House Staff Now and After the War

Colonel James R McDowell M C, U S Army, Postgraduate Training in Army Air Force Hospitals

Dr Stanley E Dorst Cincinnati, The Effect of the Accelerated Program on Faculty and Students After an Experience of Eighteen Months

Lieut Col Earl H Perry M C, U S Army, retired, The Student's Army Specialized Training Program in Action

Lieut Col Rettig Arnold Griswold, M C, A U S, The Function of the Service Command Consulting Surgeon

Other groups meeting during the session of the Southern Medical Association include the American Academy of Pediatrics, region 2, and the American Public Health Association southern branch, which will hold only a luncheon meeting of the governing council this year.

FOREIGN

Personal—The American Bureau for Medical Aid to China announced on October 8 the safe arrival at Calcutta of four medical specialists who are returning to China under its auspices. Miss Evelyn Lin, who will be superintendent of nurses at the National Central University Medical School at Chengtu, Miss Hui-yin Wang, who will be director of public health nursing in Szechuan Province, Dr Y K Wu, who will specialize in chest surgery at the Central Hospital in Kweichow, and C S Hsueh, public health statistician, who will joint the staff of the National Institute of Health at Chungking.

Deaths in Other Countries

Dr Cecil Rowntree, vice president of the International Cancer Union, died on October 14 at his home, Little Warren, East Grinstead Sussex, aged 63. He was educated at the University College, London, and had served as Hunterian professor of surgery at the Royal College of Surgeons of England. Dr Rowntree was consulting surgeon to the Royal Cancer Hospital and emeritus surgeon to the Woolwich Memorial Hospital. He was also chairman of the Westminster Division of the British Medical Association and a fellow of the British Association of Surgeons.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 17, 1943

The Proposed National Medical Service The Government's Proposals

The objections of the medical profession to certain features of the government scheme for a comprehensive medical service have been stated in previous letters. An address by Mr. Ernest Brown, minister of health, to the annual meeting of the Association of Welsh Insurance Committees is of unusual importance as it deals with some of these objections and also discloses the government's proposals more fully than has been done before. He stated that when these were published the fullest opportunity would be given for discussion by the medical profession, local government and the public. Criticism could then be based—for the first time—on full knowledge of what the government has in mind. The first aim must be to cut down some of the limitations on the present service, so that people can get consultant, specialist, hospital and convalescent treatment. Mr. Brown said. The scheme must aim at prevention as well as cure. In spite of statements to the contrary, the minister stated, it was the avowed intention of the government to preserve the important principle of free choice of doctor and clinical freedom of the doctor in treatment. He hoped that the scheme would secure a fuller service of practitioners in congested areas where they were now insufficient. The service would be based on the family as a unit and the general practitioner as its primary attendant. Yet it had been alleged that the government wanted to abolish the family doctor. What was wanted, he said, was to provide a family doctor for millions for whom one was not now available.

Nearly two years ago the government announced its intention of coordinating the voluntary and municipal hospital systems. The new health service, it was explained, would render possible a completely integrated medical service, starting from the family doctor and embracing all institutional services. This would also make available to doctors a full consultant and specialist service from the hospitals. The government also hoped to give the general practitioner a better service for post-graduate courses, so that he could keep abreast of modern developments. Perhaps even more important, the government must see that he had the opportunity for leisure to get the best possible advantage from these courses.

Changes at the Royal College of Surgeons

At a meeting of the fellows of the Royal College of Surgeons the president, Sir Alfred Webb-Johnson, reviewed important recent changes. The primary examination for the fellowship has been made entirely postgraduate with pathology introduced as an additional subject to anatomy and applied physiology. The interval between graduation and entry for the final examination is now two years. The damage done by bombing to the Royal Colleges of Physicians and Surgeons opened the question of the three Royal Colleges (the third being the College of Obstetricians and Gynecologists) working together in a combined building or in adjacent buildings. The present site of the Royal College of Surgeons had great advantages for such a building. The value of the buildings still standing was estimated at \$1,000,000. The president reported the definite view of the council that there must be a portal to the medical profession under the sole control of a professional body, and therefore the council disagreed with the suggestion that a university degree should be a *sine qua non* for medical qualification.

THE BEVERIDGE SCHEME

A representative committee of the medical profession, the president reported, was discussing the Beveridge scheme with the minister of health. The Royal Colleges were represented by their president, and he had insisted that he must be regarded as representative of consultant surgery. For this purpose the Royal Colleges had held a conference of representatives from all centers in order to obtain the views of all consultants throughout the country. They maintained that some freedom must be left both to doctor and to patient and declined to countenance the conversion of a free profession into a public service. An individual must be left free to enter the medical profession and to practice, they held. The profession must have a large say in the organization and management of the national health service. The administrative structure must allow a generous representation of the profession. The health service must be comprehensive, and the local health authorities as at present constituted did not provide satisfactory areas for dealing with the needs of the population. Some scheme of regionalization was essential. The government declared its intention that opportunities for private practice should be maintained, and the most reasonable way of providing for this seemed to be to apply the national contributory scheme only to those who needed such provision. In planning for positive health and the prevention of disease, the nonmedical proposals of the scheme—particularly improved housing, avoidance of unemployment, children's allowances, disability pay and old age pensions—were more important than revolutionary changes in medical practice.

A Practical Application of the Discovery of the Rh Factor

In a circular to local health authorities, the Ministry of Health points out a practical application of the discovery in 1940 by an American scientist that 85 per cent of the American and British white population have a previously unrecognized factor in their red corpuscles. As it was also found in the rhesus monkey it is called the Rh factor. A particular variety of jaundice and anemia has been known to occur in infants for some years. It seems to run in families, and often several infants in one family are affected. Some are stillborn, and others live only a short time. It has been found that these jaundiced infants nearly always have the Rh factor in their red cells, but their mothers are Rh negative. The infants have been jaundiced and anemic because before birth their red cells have passed into the mother's circulation, where antibodies to the Rh positive cells have developed and passed back into the infant's blood, destroying its red cells. If, however, the infant is given a blood transfusion with Rh negative blood, these antibodies are soon destroyed and its life is saved. If the mother should need blood transfusion after the infant is born, it has been found that she should also receive Rh negative blood.

A Film of Surgery in Chest Disease

A remarkable film entitled "Surgery in Chest Disease" has been shown at a London theater to a distinguished medical audience. It is the first of a series of medical films to be made for the British Council and is primarily intended for overseas medical audiences. Surgeon Rear Admiral Gordon Gordon-Taylor, a member of the medical panel of the British Council, said that the film had been made by Gaumont-British Instructional with the cooperation of medical, resident medical and auxiliary staffs of the Brompton Hospital for Diseases of the Chest, where most of the scenes were taken. The general purpose of the film is to show the scope and progress of chest surgery in Britain. Its climax is an operation for total removal of a lung affected with cancer, an operation performed for the first time only ten years ago, one which even now can be undertaken only by a few surgeons of special ability.

BRAZIL

(From Our Regular Correspondent)

Sept 25, 1943

Results of Blood Cultures in Pemphigus Foliaceus

As reported in a previous letter (*THE JOURNAL*, Jan 23, 1943, p 276), many cases of a malignant type of pemphigus foliaceus ("fogo selvagem," or wild fire) have occurred and continue to occur in the rural areas of the central states of Brazil and in the neighboring regions of Paraguay and Bolivia as well. The main focus of the disease is the state of São Paulo, where hundreds of cases are already known, and where a special service has been organized to combat the disease. This service, under the direction of Dr J P Vieira, has a hospital, several outpatient clinics and visiting doctors. The cause of the disease is still unsolved, even its infectivity and its contagious nature are subjected to much discussion. Dr J Aranha Campos, assistant director of the São Paulo service, has published a study of the results of blood cultures from 600 cases during the febrile stage of the disease. The culture medium used was glucose broth with liquid petrolatum pH 7.6 in tubes of 10 cc. Equal parts of blood and culture medium were mixed. In 130 of these cases, with temperature of 39 C (102.2 F) and above, streptococci, mostly of the hemolytic type, were found in pure culture. As controls, Dr Campos made blood cultures from all other patients without fever or subjected to artificial fever, and these cultures were always negative or were positive only for *Staphylococcus albus*. The patients were divided into five groups according to the severity of the disease. The fever is rare in patients with slight symptoms or in the regressive stage of the disease. But the feverish spells are frequent in patients with generalized cutaneous lesions. The fatal cases present several of these feverish spells in the last stage of the illness. The author emphasizes the close relationship between the streptococcic bacteremia and the fever spells and the spread of the bullous cutaneous lesions. The high hospital fatality rate of the disease (about 40 per cent) is explained by Dr Campos as the effect of the streptococcic toxemia, which coincides with the final diarrhea and hyperpyrexia. In the patients subjected to artificial fever the general condition is not modified, and spread of bullous dermatitis does not occur. Dr Campos concludes that the hemolytic streptococcus is probably the cause of the disease.

Cancer and Race

Some time ago Dr Joaquim E de Alencar published the first part of a study on the epidemiology of cancer in Brazil, the main features of which have been reported in a previous letter (*THE JOURNAL*, June 12 p 459). In a new paper he presents the mortality from cancer in Rio de Janeiro according to races and nationalities. As the composition of the city population is not known in relation to color, because this kind of information has never been included in the censuses, and as the information regarding the nationalities would have to be derived from the last census, which was taken in 1920, Dr Alencar decided to study the trend of mortality from 1903 to 1941, not as specific death rates for each color or nationality, but as a ratio between the absolute number of deaths from cancer to the absolute number of deaths from all causes, in each specific group of population. During the thirty-nine years included in the study the ratio of deaths from cancer to the deaths from all causes in the general population has risen steadily from 0.0013 in 1903-1905 to 0.0036 in 1939-1941, which corresponds to an increase of 174 per cent. The increase has been greater for the white than for the colored people: 201 per cent for the white, 161 per cent for the mulatto and 127 per cent for the Negro.

The differences in the increase of a similar ratio for the several nationalities into which the population is divided in the Brazilian statistical returns present interesting facts. The average increase of 174 per cent for the general population is differentiated as follows for the various nationalities: Brazilian 187 per cent, Portuguese 213, Italian 115, Spanish 310, German 306, English and Anglo-American 400, other European 149 and Asiatic (mainly Syrian) 385. It is not easy to grasp the complete significance of these figures, but Dr Alencar points out the larger increase of the ratio in the population of European descent, particularly Nordic, a fact similar to the higher death rates shown by him in the first part of his study for the southern Brazilian cities, where the amount of people of European descent is larger. It is interesting to recall, from the first part of the study, the increasing trend of the mortality from cancer in Rio de Janeiro since the beginning of the century: 33.8 per hundred thousand in 1902-1911, 41.7 in 1912-1921, 45.9 in 1922-1931 and 55.2 in 1932-1941. For the last five years, 1938-1942, the progression of the cancer death rate has been 55.0, 59.0, 65.3, 66.4 and 67.3.

Healthy Carriers of *Endameba Histolytica* Cysts

Dr A Franco do Amaral, from the Department of Parasitology of the University of São Paulo, and Dr C Avila Pires, physician of the penitentiary of the state of São Paulo, report the results of a survey in a sample of 300 inmates of the penitentiary to study the incidence of *Endameba histolytica* cysts in healthy persons. All the individuals examined were apparently in good health at the moment of the examination. The examinations have been made by the Faust zinc sulfate centrifugal flotation method. As far as the authors are aware it is the first time this method has been used for an extensive survey in Brazil. The individuals in the sample were subjected to a series of successive examinations, positive carriers having been found even in the fifth examination. Only the sixth examination showed no more cyst passers. The examinations were performed for each person during a period of twenty days with the hope of obtaining a fecal specimen corresponding to a stage of maximum production of cysts. Of the total of 300 persons examined 118 were positive for cysts in the total of five examinations (39.3 per cent). The first examination showed 64 positive results (21.3 per cent), the second 24 (8.0 per cent), the third 17 (5.6 per cent), the fourth 10 (3.3 per cent), the fifth 3 (1.0 per cent) and the sixth none. The large majority of the positive carriers were agricultural laborers from scattered districts of the state. The very good hygienic conditions of the penitentiary led the authors to exclude the possibility of the infection having been contracted at the institution. Such a high incidence of cyst carriers, as compared with that observed in other countries where the same method has been employed, suggests its use to survey other groups of healthy persons in Brazil in order to furnish a basis for estimating the real significance of amebiasis in the country.

Marriages

GEORGE E ROULHAC, Florence, Ala., to Miss Polly Ann Bunting of Franklin, Tenn., near Oran, Algiers, North Africa, October 2

HERBERT RICHARDSON DOWE, Columbia, S. C., to Miss Jewel Gwendolyn Rhinehart of Leesville, September 9

TOM JERRY SMITH, Covington, Ky., to Miss Martha Geraldine Allen of St. James, Mo., in August

LYMAN DAVID HEIM, Schuylkill Haven, Pa., to Miss Lulu Longenberger of Nuremberg in August

FRANK S. CROSS, Lansing, Mich., to Miss Mary Charlotte Keith of Chicago, June 29

ALBERT EDEN CREMER, St. Louis, to Miss Evelyn Edith Kline of Columbia, S. C., in July

Deaths

Joseph Milton Heller of Washington, D. C., Georgetown University School of Medicine, Washington, 1896 an Affiliate Fellow of the American Medical Association assistant demonstrator of anatomy at his alma mater from 1897 to 1898, professor of tropical medicine at the George Washington University School of Medicine from 1904 to 1910, dispensary staff member at the Emergency and Garfield hospitals from 1896 to 1898, veteran of the Spanish-American War, Philippine Insurrection and World War I in charge of supply of water in Manila during cholera epidemic in 1902 and received commendation by the late President William Howard Taft, then governor general of the Philippines commissioned major in the medical reserve corps of the U. S. Army in 1917, later served as division sanitary inspector and acting chief surgeon of the 90th division, commanding officer of Base Hospital at Fort Riley, Kan., General Hospital number 23, Hot Springs, N. C., and number 22 in Philadelphia lieutenant colonel in the medical corps of the U. S. Army from 1918 to 1922, colonel in the medical reserve corps not on active duty participated in General Lawton's advance in northern Luzon and surgeon of Major Batchelor's "Lost Battalion" recommended for Congressional Medal of Honor in 1915 received Silver Star citation from the President of the United States for attending wounded under fire, Battle of Naguilian, Luzon, Dec. 7, 1899, since 1938 surgeon general of the Military Order of the World War, for many years national secretary of the Caraboa, organization of officers who served in the Philippines member of the Military Order of Foreign Wars, Military and Naval Order of the Spanish American War and the Association of Military Surgeons of the United States died in the Naval Hospital National Naval Medical Center, Bethesda, Md., October 11, aged 71, of coronary artery disease

George C. Chene, Detroit, Detroit College of Medicine 1905, member of the Michigan State Medical Society and the Radiological Society of North America past president of the Detroit Roentgen Ray and Radium Society, curator of the museum and clinical assistant in gynecology at his alma mater from 1908 to 1910, clinical assistant in gynecology in 1911 clinical assistant in roentgenology from 1911 to 1913 assistant clinical professor of roentgenology from 1913 to 1918 professor and head of roentgenology from 1918 to 1920 and assistant professor of roentgenology, 1920-1921, established the first x-ray laboratories at St. Mary's and Providence hospitals in Detroit and at the Hotel Dieu Hospital in Windsor Ont. Canada his retirement from active duty at the Providence Hospital was marked by the staff with a public banquet at which he was the recipient of an honor plaque for long and faithful service secretary of the hospital staff for many years, staff member of St. Mary's Receiving, Eloise and Providence hospitals either as attending or as consulting radiologist, died in the Harper Hospital August 31 aged 61, of carcinoma of the tongue and throat

Peter Whitman Rowland, University, Miss. Memphis (Tenn.) Hospital Medical College, 1882 professor of pharmacology at the University of Mississippi School of Medicine member and past president of the Mississippi State Medical Association and the Mid South Post Graduate Medical Assembly fellow of the American College of Physicians, contract surgeon University of Mississippi Student Army Training Corps, during World War I, reported to be first physician to administer oxygen through the nose tube in the treatment of pneumonia, using the device on a patient in 1903 the medical library at the University of Mississippi was named in his honor in 1939, two years previously he volunteered his services to augment the library and became field director on the staff of the Bramlett Hospital Oxford died in Oxford, October 14 aged 82 of coronary thrombosis

Edmund Pendleton Shelby of Sarasota Fla. University of the City of New York Medical Department, 1891 clinical professor of medicine at the University and Bellevue Hospital Medical College New York from 1918 to 1934 formerly instructor in pharmacology and therapeutics at the Cornell University New York for many years on the staff of the New York City Hospital past president of the New York Pathologic Society and the West End Medical Society formerly chairman of the section on medicine of the New York Academy of Medicine fellow of the American College of Physicians consultant in medicine at the Florida Medical Center Venice author of 'Hodgkin's Disease' 1907 and 'Balancing the Physical Budget in Hygiene' 1936 died in Lexington Ky. Sept. 22 aged 76 of carcinoma

Charles P. Arzt, St. Paul University of Minnesota College of Medicine and Surgery, Minneapolis, 1895, died July 29, aged 73, of ventricular fibrillation

Alfred Goodrich Bailey, Berkeley, Calif., Homeopathic Hospital College, Cleveland, 1889, died August 22, aged 76, of tuberculosis and nephritis

Elizabeth Ethel Bowen, Lincoln Park, N. J. Woman's Medical College of Pennsylvania, Philadelphia, 1907, died August 4, aged 61, of heart disease and multiple myeloma

Arnold Louis Brandt of Pacific Beach, Wash., Washington University School of Medicine, St. Louis, 1902, formerly associated with the Indian Service, died in the Barnes Hospital, St. Louis, July 5, aged 66, of retroperitoneal hemorrhage due to ruptured aneurysm of the abdominal aorta

Mills C. Brasher, Linden, Ind. Bennett College of Eclectic Medicine and Surgery, Chicago, 1889, on the staff of Culver Hospital, Crawfordsville, where he died August 13, aged 78, of appendicitis, gallstones and peritonitis

John Joseph Brennan, Worcester, Mass., Harvard Medical School, Boston 1886, member of the Massachusetts Medical Society, in 1937 was presented with a scroll commemorating fifty years' membership in the Worcester District Medical Society, on the staffs of the Worcester City Hospital and St. Vincent Hospital, where he died August 26, aged 79, of arteriosclerosis

John L. Brown, Campbell, Mo., St. Louis College of Physicians and Surgeons, 1890, member of the Missouri State Medical Association, died in the Poplar Bluff Hospital, July 2, aged 73, of chronic myocarditis

John W. Brown, Jefferson Township Ind., Hospital College of Medicine, Louisville, Ky., 1881, died July 10, aged 91, of cerebral hemorrhage

Mabel Margaret Wirt Butka, Pomona, Calif., College of Medical Evangelists, Loma Linda and Los Angeles, 1918, on the staff of the Pomona Valley Hospital, died in La Verne August 22, aged 48, of accidental carbon monoxide poisoning

Malcolm Samuel Campbell, Malvern, Iowa, Tufts College Medical School, Boston, 1915 served one month on the staff of the Binghamton (N. Y.) State Hospital as resident in psychiatry, died in Binghamton August 7, aged 52, of subdural hematoma

William Price Connally, McGregor, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1898, a captain in the medical corps of the U. S. Army during World War I, died in a Waco hospital July 11, aged 72, of cerebral hemorrhage

Isaac Gladstone Cook, St. Louis, St. Louis College of Physicians and Surgeons 1911 served during World War I, died in the Veterans Administration Facility, Jefferson Barracks August 8, aged 69, of bronchopneumonia

Lucy Gusta Coon of Sterling, Ill., State University of Iowa College of Medicine, Iowa City, 1927, medical adviser for women at the University of Illinois, Urbana, from 1936 to February 1943 and since the latter date in a defense plant at Dixon, died in the Grant Hospital, Chicago, August 29, aged 47 of pulmonary embolism

Louis Leopold Davidson, Newark, N. J. University of Vermont College of Medicine, Burlington, 1902, Cornell University Medical College, New York, 1903, member of the Medical Society of New Jersey also a lawyer, formerly coroner of Essex County a director of the Lincoln National Bank on the staff of the Newark Beth Israel Hospital, where he died August 28, aged 63 of cerebral hemorrhage

Benjamin Lawrence Dorsey, Los Angeles Marions-Sims College of Medicine St. Louis, 1896 Barnes Medical College St. Louis, 1899 formerly professor of gynecology at the Barnes Medical College died in Guadalajara Mexico, August 2, aged 73 of acute enterocolitis

John William Eckstein, Ryan, Iowa Northwestern University Medical School, Chicago 1916 served in France and as a first lieutenant in the medical corps of the U. S. Army during World War I died in the Veterans Administration Facility Des Moines, August 7, aged 53, of lobar pneumonia

Walter Brownley Foster, Richmond Va. Medical College of Virginia, Richmond 1901 associate public health physician for the Virginia Department of Health since 1940 director of public welfare for the city of Richmond from 1924 to 1940 organized the city health department in Roanoke and served as health officer from 1910 to 1924 past president of the Roanoke Academy of Medicine and a member of the governing council of the American Public Health Association died 10 aged 65 of coronary thrombosis

Frank Harrold Grandy ♂ Seattle, Indiana University School of Medicine, 1926, died August 15, aged 45, of hypertension and cerebral hemorrhage

William Walter Grantier, Buffalo, University of Buffalo School of Medicine, 1899 died August 8, aged 67, of chronic invocarditis, arteriosclerosis and cerebral hemorrhage

Richard Watson Graves, Arlington, Texas, University of Louisville (Ky) Medical Department, 1883, died August 5, aged 85, of senility

Samuel Thomas Gray ♂ Albia, Iowa, State University of Iowa College of Medicine, Iowa City, 1889, died in Wichita, Kan, August 12, aged 77, of uremia

Charles Gregory Griffin, Miami, Fla University of Nashville (Tenn) Medical Department 1908, member of the Florida Medical Association, died in Nashville, Tenn, August 31, aged 60, of coronary occlusion

Archer Thomas Hampton, Oakwood, Texas, Southern Methodist University Medical Department, Dallas, 1913, member of the State Medical Association of Texas chairman of the governing board of the Orphans Home at Corsicana and the Old Folks Home at Ennis, died July 7, aged 59, of coronary thrombosis

George Wesley Horrom, Rolla, Mo, Medical College of Indiana, Indianapolis, 1894, member of the Missouri State Medical Association, past president of the Phelps-Crawford Counties Medical Society, died July 10 aged 73, of cerebral hemorrhage

Andrew Richard Johnson, Isanti, Minn, University of Minnesota Medical School, Minneapolis, 1929 member of the Minnesota State Medical Association, on the staff of the Asbury Hospital, Minneapolis, where he died July 25, aged 44, of pulmonary embolism following an appendectomy

Frederick Marshman Kennison, Boston, Tufts College Medical School, Boston 1905 member of the Massachusetts Medical Society, died suddenly July 31, aged 80

James Oscar Meade, Mendota, Va, Tennessee Medical College, Knoxville, 1898, member of the Medical Society of Virginia, died July 17, aged 70, of hypertension and thrombosis

John William Montrose, Grass Valley, Calif, Bellevue Hospital Medical College, New York, 1892, died in Stockton July 26, aged 84, of senility

James T Myers ♂ Hotchkiss, Colo, University Medical College of Kansas City, Mo 1894, served as health officer, died July 28, aged 75, of cerebral hemorrhage

William Frederick Nienstedt, Hartford Kan College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, 1898, member of the Kansas Medical Society, died in the Newman Memorial County Hospital, Emporia, July 6, aged 67, of coronary thrombosis and sclerosis

Albert Sidney Oburn ♂ Altoona, Pa Jefferson Medical College of Philadelphia, 1896, a member of the exemption board during World War I and recently a member of the induction board, a director of the Blair County Tuberculosis Society, chief of the medical staff of the Altoona Hospital, died August 9, aged 68, of coronary occlusion

Richard John O'Connell, Chicago Rush Medical College, Chicago 1899, formerly instructor in medicine at the Loyola University School of Medicine, for many years on the staffs of St Joseph's and West Side hospitals, Chicago, and St. Francis Hospital, Evanston, Ill, where he died August 22, aged 74, of auricular fibrillation and chronic myocarditis

Frederick Strattner Orem ♂ Baltimore University of Maryland School of Medicine, Baltimore, 1900, associate in pediatrics at his alma mater, on the dispensary staff of the University Hospital, where he died August 8, aged 70, of nephritis

Horace M Paynter, Salem, Ind, University of Louisville (Ky) Medical Department, 1890, died August 18, aged 77, of cerebral hemorrhage, hypertension and diabetes mellitus

Thomas H Pope ♂ Newberry, S C, Medical College of the State of South Carolina, Charleston, 1908 past president of the Newberry County Medical Society, member of the board of trustees of his alma mater, member of the District Advisory Medical Board of Selective Service died August 6, aged 67, of coronary occlusion and hypertension

Francis M Roberts, Jacksonville, Ill, Cincinnati College of Medicine and Surgery, 1900, member of the Illinois State Medical Society, formerly postmaster and member of the school board of Lynnville, served three terms as mayor of Chapin and several terms as member of the school board, at one time superintendent of the Morgan County Tuberculosis Sanatorium

"Oaklawn", on the staffs of Our Saviour's Hospital and the Passavant Memorial Hospital, where he died August 6, aged 73, of cerebral hemorrhage

Allen Charles Tiffany, Mackinaw City, Mich, Detroit College of Medicine and Surgery, 1914, served overseas and as a major in the medical corps of the U S Army during World War I, major in the medical reserve corps not on active duty, served on the city council for a number of years, on the courtesy staff of the Little Traverse Hospital, Petoskey, where he died August 10, aged 63, of coronary and cerebral arteriosclerosis and hypertension

Juan Arango Villegas, Cliffside Park, N J, Jefferson Medical College of Philadelphia, 1929, member of the Medical Society of New Jersey, school physician for Cliffside Park and formerly at Fairview, on the staffs of Holy Name Hospital, Teaneck, Englewood Hospital and North Hudson Hospital, Weehawken, died in the Medical Center of Jersey City August 18, aged 41, of pneumonia

William Desmond Wagar, Michigan, N D, University of Minnesota College of Medicine and Surgery, Minneapolis, 1898, member of the North Dakota State Medical Association for many years mayor, died in Kingston, Ont, Canada, July 23, aged 68, of carcinoma

Bruce Courtney M Whyte ♂ Battle Creek, Mich, Trinity Medical College, Toronto, Ont, Canada, 1904, formerly on the staff of the Battle Creek Sanitarium, on the staff of the Community Hospital, where he died August 17, aged 64, of carcinoma of the stomach and myocardial insufficiency

DIED WHILE IN MILITARY SERVICE

William Morgan Chew, New York, University of Virginia Department of Medicine, Charlottesville, 1931, member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Otolaryngology, formerly a member of the staffs of Bellevue and St Luke's hospitals, entered the medical corps of the U S Naval Reserve as a lieutenant commander on June 24, 1942, died in the Johns Hopkins Hospital, Baltimore, September 4, aged 39

Hugh Beauregard Disharoon ♂ Lieutenant Colonel, M C, U S Army, Lewisburg, Tenn, Vanderbilt University School of Medicine, Nashville, 1935, appointed a lieutenant in the medical reserve corps of the U S Army on June 12, 1935 and began active duty in the medical corps of the regular Army on July 1, 1940, assigned to the Fitzsimons General Hospital, Denver, rose through the various ranks to that of lieutenant colonel on Jan 15, 1943, died in the Station Hospital, Fort Benning, Ga, August 22, aged 32, of virus pneumonia

John Deetz Houck, Scranton, Pa, Harvard Medical School, Boston, 1941, appointed a lieutenant in the medical corps, Army of the United States, April 23, 1942, began active duty Aug 1, 1942, attached to the 407th Infantry, Camp Maxey, Texas, later commissioned a captain, died, in the O'Reilly General Hospital, Springfield, Mo, October 3, aged 27, of cerebral edema due to brain tumor of the left frontal lobe.

Thomas Lacy Morrow ♂ Medical Director, Captain, U S Navy, Mebane, N C, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1915, appointed an assistant surgeon in the U S Naval Reserve, April 10, 1917 and on June 23, 1917 a lieutenant (jg) in the medical corps of the U S Navy, advanced to the rank of captain in July 1941 served aboard the U S S *Nero*, *Eurona*, *Patoka* and *Tulsa*, served at the Naval Base, Cardiff, Wales, with the Destroyer Force, the Atlantic Fleet, at the Naval Hospital, and the Pharmacist's Mates' School, Norfolk, Va, the Marine Barracks and Naval Hospital at *Parris Island*, S C, the Naval Hospital, Boston, and on the Asiatic Station, fellow of the American College of Surgeons, awarded a letter of commendation for his work as head of the Medical Relief Unit at Belize, British Honduras, after the hurricane of September 1931 and the medal of distinction by the president of Nicaragua for services rendered in that country from May 1931 until November 1932 as brigade surgeon, second brigade of marines, died at Guilford College, N C August 11, aged 54, of cerebral hemorrhage, while on leave from his post of duty at the Naval Hospital, Marine Barracks, New River, N C

Bureau of Investigation

MISBRANDED COSMETICS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and are designated C. N. J. The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration]

Ambrosia Tightener—Hinze Ambrosia Inc. New York. Shipped between Dec. 6 1940 and Jan. 3 1941. Composition: an astringent consisting essentially of alcohol, water, zinc phenolsulfonate and perfume. Misbranded because of the following false and misleading representations on label and in accompanying circular: "Tightener for large pores wrinkles oiliness. Tends to prevent the enlargement of pores. It is especially useful to lessen oiliness and aids in clearing up pimples and muddy complexions resulting from external causes. Stimulates the skin. Ambrosia cream contains ingredients that resemble the natural sebaceous oils and fats of the human skin. It helps to make dry skin smooth and thus aids in removing the annoying tiny lines caused by skin dryness."—[C. N. J. F. D. C. 84 February 1943]

Camelline—Walter M. Willett, San Francisco. Shipped Aug. 28 1941. Composition: essentially calcium carbonate, bismuth subcarbonate, alcohol and water. Misbranded because circular accompanying package falsely represented that this product when used as directed was a natural aid to beauty and greater charm, would keep the skin delicate and youthful, would preserve the youthful creamy appearance of the skin, was a stimulating lotion, would protect the skin against wind and sun, was beauty and youth, would protect the face against the ravages of weather and prevent the disagreeable effects of exposure to the sun and wind.—[C. N. J. F. D. C. 85 February 1943] This product was also misbranded under the provisions of the law applicable to drugs.

Chin Firm—Burtley Company, New York. Shipped between April 1 and 11 1941. Composition: essentially a clay with water and perfume. Misbranded because of false and misleading representations that this product would produce a firm chin and throat line besides correcting crow's feet.—[C. N. J. F. D. C. 87 February 1943]

Chin Up—L. R. Kallman and Company, Chicago. Shipped June 3 1941. Composition: 53.4 per cent of alcohol with tannic acid, water and perfume. Misbranded because it contained a larger amount of alcohol than the 39 per cent declared on the label. Further misbranded because label falsely represented that the use of this product would result in elimination of crepey skin or flabby tissues of neck or skin.—[C. N. J. F. D. C. 88 February 1943]

La Bonita Hollywood Skin Stimulant and La Bonita Hollywood Texture Oil—House of Hollywood, Los Angeles. Shipped May 2 1941. Composition not reported. The first named was misbranded because its designation falsely represented that the product contained some ingredient capable of stimulating the skin. The second was misbranded because of the misleading term "Texture Oil" in its name and because the directions for use gave the false impression that this preparation would affect the structure of the skin whereas it would not.—[C. N. J. F. D. C. 86 February 1943]

Natone Natural Oil for the Hair—J. D. Bentley, Los Angeles. Shipped June 20 1941. Composition: essentially saponifiable and unsaponifiable fats, perfume, water and a small amount of phenol. Misbranded because label falsely represented that this product would promote the growth of hair since it did not contain any ingredient capable of producing that result.—[C. N. J. F. D. C. 89 February 1943]

S. T. D. "The Hair Tonic"—George A. Dustin, Chicago. Shipped Dec. 17 1941. Composition: essentially small amounts of potassium arsenite, sodium borate and water. The potassium arsenite contained arsenic equal to 0.2 gram per hundred cubic centimeters. Misbranded because of the following false and misleading statements in labeling: "Stops the dandruff. The Hair Tonic for dandruff falling hair itching scalp and all scalp ailments. Wet scalp with Ess Tee Dee Hair Tonic and massage every day until scalp is free from dandruff. For best results shampoo the hair once each week then apply Ess Tee Dee Hair Tonic after hair has dried and continue applications every third or fourth day until scalp is free from dandruff and then use Tonic only as often as it is necessary to keep the scalp in a clean and healthy condition." The Hair Tonic.—[C. N. J. F. D. C. 90 February 1943] The product was also declared misbranded under the provisions of the law applicable to drugs.

DANGEROUS TO HEALTH

Because of Inadequate Warnings on Labels

[EDITORIAL NOTE—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in those pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration]

Real Lax Chewing Laxative—Pennsylvania Drug Products Corporation, Pittsburgh. Shipped between July 10 and Aug. 7 1941. Composition: a peppermint flavored gum containing phenolphthalein. Misbranded because label failed to warn adequately against use in those pathologic conditions wherein product might prove dangerous to health or against unsafe duration of administration for protection of user since label did not contain a warning against use when abdominal pain, nausea, vomiting or other symptoms of appendicitis are present and against frequent or continued use which might result in dependence on laxatives.—[D. D. N. J. F. D. C. 618 February 1943]

T. S. B. Saline—T. S. Burns and Boys Company, Buffalo. Shipped March 18 1941. Composition: essentially a mixture of partially dehydrated epsom salt and Glauber's salt with traces of magnesium carbonate and sodium chloride. Misbranded because indefinite dosage directions on label might cause danger to health of young children. Misbranded further because labeling did not adequately warn against giving it in those pathologic conditions wherein use of product might be dangerous to health or caution against unsafe dosage or duration of administration since the package carried no warning to avoid the product when symptoms of appendicitis are present such as abdominal pain, nausea or vomiting or caution against frequent or continued use when it might result in dependence on cathartics to move the bowels. Again misbranded because of label misrepresentations that the product would be efficacious as a laxative and intestinal cleanser and effective in treating rheumatism, constipation, indigestion, colds, skin rash, biliousness and many conditions due to faulty elimination since it would not be useful for such purposes. Misbranded further because of label representation that magnesium carbonate was an active ingredient whereas it was present only in traces. Misbranded also because label failed to bear common or usual name of each ingredient or an accurate statement of the quantity of contents.—[D. D. N. J. F. D. C. 556 November 1942]

Vitalax (Special Formula No. 8558)—Medical Specialty Company, San Antonio, Texas. (Repackager of product which originated in Bristol, Tenn.) Shipped Feb. 1 1941. Composition: phenolphthalein (about 1 grain per tablet) with extracts of yeast and bile. Declared misbranded for the following reasons: labeling of tablets in original container bore no directions for use and in the case of the repackaged tablets the statement suggesting the dose was not a suitable direction for use of laxative tablets of this composition; labeling failed to bear adequate warning against giving to children when such use might be dangerous to health or to caution against unsafe dosage or methods or duration of administration since adequate warning was not given against potential danger of establishing the laxative habit; no warning to discontinue use if skin rash appeared and in the case of the repackaged portion there was no caution against use when symptoms of appendicitis are present; label statements as to composition were false and misleading in not revealing the material fact that product contained phenolphthalein, a coal tar laxative drug; designations "Vitalax" and "Vitamin B Laxative" (repackaged portions) gave the false impression that the laxative action of the tablets was due to their vitamin or vitamin B content whereas it was actually due to the phenolphthalein; label claims on repackaged portion as to stimulating liver function and producing abundant flow of bile for normal digestion and proper elimination without use of habit-forming cathartic drugs were false and misleading since product was not efficacious for such purposes and did contain a habit-forming cathartic drug, namely phenolphthalein; label claims (on repackaged portion in envelopes) as to toning digestive tract and stimulating flow of bile without use of habit-forming cathartic drugs were false and misleading; label claim on habit-forming in one repackaged portion was false and misleading; labeling failed to bear common or usual name of each active ingredient since it did not mention one of these phenolphthalein labels of repackaged portion did not list common or usual name of one active ingredient, bile extract, since this could not easily be identified under the terms used: Sodium Taurocholate, Sodium Glycocholate and Bile Salts Compound.—[D. D. N. J. F. D. C. 553 November 1942]

Correspondence

ERRORS IN ARTICLE ON DOCTOR SHORTAGE FROM OFFICE OF WAR INFORMATION

To the Editor —I have had a large number of calls recently in regard to temporary licensure for the practice of medicine in New York State from physicians who wish to come to New York State under such an arrangement. One of the applicants referred to an article he had read in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

I find in the September 25 issue on page 215, in the middle of the fifth paragraph of the article entitled "Doctor Shortage and Civilian Health in War Time" the following statement: "Only seven states have laws permitting temporary licensure. These are Delaware, Maine, Nevada, Pennsylvania, Washington, New York and Montana." I understand that this article is a comprehensive report prepared by the Office of War Information. I do not know to whom to direct this statement in regard to that information being incorrect.

So far as I am aware there has been no change in the New York law governing the practice of medicine permitting temporary licensure in the practice of medicine. I would be interested to know where the writer of this article obtained that information.

In the next paragraph, the sentence beginning on the last line in the first column reads as follows: "The service found that nine states had medical license reciprocity with New York but none of these states could, by law, admit the foreign doctors." This statement is in error, for at the present time there are no reciprocity agreements between New York State and any other state. The law governing endorsement of licenses was amended by act of legislature in 1940 and at that time all reciprocity agreements were abolished. I think if you will refer to your table entitled "Reciprocity and Endorsement Policies" as published in the statistical number since that time you will find that in that table there is no indication of reciprocity agreements between New York State and any other state. Under the present law a physician from any state who has met all the New York State requirements upon submitting proper credentials and paying the proper fees may receive an endorsement of that license. This is regardless of whether or not that state grants endorsement to a physician holding a New York medical license.

ROBERT R. HANNON, M.D., Albany, N. Y.
Secretary, New York State Board of Medical Examiners

IMMUNIZATION AGAINST INFECTIOUS DISEASES

To the Editor —The current comment on immunization against infectious diseases in large cities (*THE JOURNAL*, September 18) states that immunizations against typhoid were "negligible in frequency as compared with those against diphtheria and smallpox." It appears to be little known that in the spring of 1942 about 90 per cent of the population of the Territory of Hawaii received typhoid-paratyphoid inoculations. This program was instituted by the department surgeon (Brig Gen Edgar King) because there was no line of separation between military and civilian health problems in that territory. The wisdom of this move was dramatically revealed by the occurrence of an epidemic of typhoid in Honolulu (described in

the *Hawaii Medical Journal*) shortly after the inoculation program was instituted (and long before it was completed). The incidence of typhoid in Hawaii during the postinoculation years should serve as the basis of an interesting study.

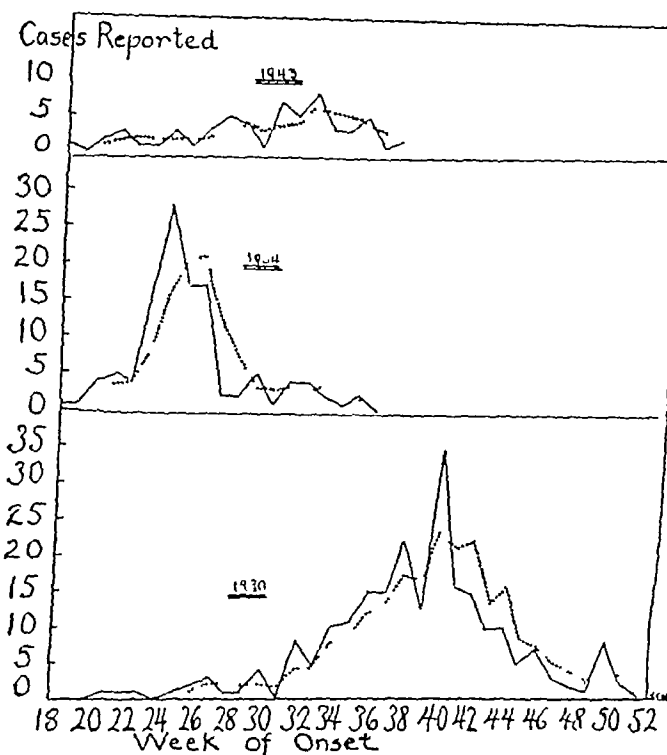
ROBERT J. HOAGLAND, Major, M. C., A. U. S.

PREDICTION OF POLIOMYELITIS INCIDENCE IN EPIDEMIC YEARS

To the Editor —Attention was recently directed to the communication on the prediction of poliomyelitis incidence in epidemic years (*THE JOURNAL*, September 4, p. 53). An effort was made to determine whether or not the experience in San Francisco coincided with that presented for Chicago.

As a result of a review of our recent epidemic years, apparently the observation can be made that the epidemiologic statistical pattern of infantile paralysis is still obscure, and the following conclusions may be reached:

1 The 1943 accelerated incidence in San Francisco should not be considered epidemic.



Poliomyelitis in San Francisco. Solid line, cases reported by week of onset. Dotted line, same using moving average (three weeks).

2 No standard for predicting the peak of an epidemic can be determined at least in San Francisco, as the interval from initial increase to peak varies between the years 1930 and 1934 from four to seven weeks.

3 Again, for San Francisco, it is not possible to assert with assurance that seasonal prevalence is fixed or to be predicted in any years. In 1930 the peak came in October, in 1934 in June, in the current cases the highest incidence was reported in August.

4 Geographically speaking, differences in incidence trends of this particular disease preclude the possibility of making statistical generalizations.

Attached is the chart from which these conclusions were drawn, depicting reported incidence by week of onset and showing the curve of incidence smoothed by use of moving averages for the three epidemic years 1930, 1934 and 1943.

J. C. GEIGER, M.D., San Francisco
Director of Public Health

"GROWTH ACCELERATING PROTEIN"

To the Editor —It is indeed surprising to me that your editorial staff (THE JOURNAL, May 22, p 232) would select the article by White and Sayers (*Proc Soc Exper Biol & Med* 51 270 [Nov.] 1942) for special recognition. I call particular attention to that part of the article and the editorial which has to do with "soybean protein," because that is my special field. I want to make three particular criticisms of the original article.

1 The 'commercial soybean protein' used by the authors was obtained from the Medical Research Division, Sharp & Dohme, Inc, who in turn obtained the material from the Glidden Company. This product is one we make by a special process for an industrial adhesive. An alkaline treatment used in this process practically eliminates the possibility of this material being of good nutritional value. Our protein was further treated with alkali which would tend to decrease further the nutritive value. Although we had every reason to suspect a poor nutritional product we have fed this "soybean protein" and have found our suspicions well founded. We can furnish more data than White and Sayers published that this product is poor nutritionally. This commercial soybean protein is an adhesive used in the paper and fiberboard industry and is never sold or recommended for a food product.

2 White and Sayers state that they heated this material in an oven at 105 C for one hundred minutes to improve the nutritive values of the protein. They quote Wilgus, Norris and Heuser as their authority for this treatment. A check on this article will show that Wilgus, Norris and Heuser obtained the feeding materials for their studies from J W Hayward, then of the Wisconsin Experiment Station. By going to one of the papers from Wisconsin by Hayward, Steenbock and Bohstedt (*J Nutrition* 11 219 [March] 1936) we find on page 227 a table showing that heat in an electric oven had no appreciable effect on the nutritive value of soybean protein. It is apparent that White and Sayers not only used an inedible soybean product for their test but that the treatment they gave the product would not tend to increase its nutritive value.

3 The literature of science has many references to the high nutritive value of soy protein. We have data in the laboratory of the Glidden Company which will show the nutritive value of the protein as it is found in an edible product, soy flour, which is made for a food and not an adhesive to be almost the same as the nutritive value of the protein of spray dried skimmed milk powder. The value of such a milk product is certainly accepted. In this laboratory we have data showing seven consecutive generations of rats raised on a simplified diet which derives its protein from soy flour. We discontinued the use of dehydrated yeast as a source of the vitamin B complex some years ago but for comparison with the data presented by White and Sayers we went back and hunted up data from our laboratory where we used yeast as the B complex source and 'Labco Vitamin Free' casein as the check lot of protein.

Protein level of diets, 20 per cent

Test period, fifty six days

Animals piebald rats 22 ± 1 day of age at start of trial

Source of Protein	Number of Animals	Average Daily Weight Gain in Grams	Average Daily Food Consumption
Casein	10	2.26	10.5
Soy flour	10	3.07	13.6

Inasmuch as methods for preparing isolated globulins of unquestionably high nutritive value have not been exhaustively explored we feel that the utmost caution should be exercised in approving or condemning such newcomers in the field of protein nutrition.

J L GABBY,
5165 West Moffat Street
Chicago

Chairman, Nutrition Committee, Sov Foods
Research Council Soy Flour Association

USE OF THE TERM PARA

To the Editor —Although I do not wish to add further confusion to the question regarding the term para, I would like to state that I was taught that para is an abbreviation of, and derived from the Latin gerundive form parturienda, the translation of which is "is going to give birth." It is for this reason that many obstetricians have applied the term para 1 and so on to a woman who is in labor for the first time and nullipara to one who has never borne a child. It seems to me that the change in the application of the term para has been made during recent years. It would be desirable if a general agreement could be reached in the application of this term for the sake of uniformity of all hospital records.

HANS SEIDEMANN, Captain, M C, A U S

VITAMIN DEFICIENCY BY INTERFERENCE

To the Editor —In line with the article on "Vitamin Deficiency by Interference" in THE JOURNAL, September 18, page 151, it is interesting to note another evidence of this action. In attempts to prevent coccidiosis in chickens, it was shown (Holmes, C E, Deobold, H J, and Herrick, C A. Sulfur and Rickets, *Poultry Science* 17 136, 1938. Diseases of Poultry, edited by H E Biester and Louis Devries, Iowa State College Press, 1943, p 755) that, when 2 to 5 per cent of sulfur was included in a ration in which the sole source of vitamin D was cod liver oil, rickets developed. Apparently the sulfur made the vitamin D of the cod liver oil unavailable for absorption.

MARTIN M KAPLAN, V M D, M P H, Waltham, Mass

Medical Examinations and Licensure**COMING EXAMINATIONS AND MEETINGS****BOARDS OF MEDICAL EXAMINERS****BOARDS OF EXAMINERS IN THE BASIC SCIENCES**

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Oct 30 page 585

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Nov 15-17 and Jan 17-19 Sec. Dr J S Rodman 225 S 15th St Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE *Written* Various centers, Feb 21 Final date for filing application is Dec 15 Asst Sec. Dr William A Werrell, 1301 University Ave., Madison Wis

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written Part I* Locally, Feb 12 Final date for filing application is Nov 15 *Part II* May or June Sec. Dr Paul Titus 1015 Highland Bldg Pittsburgh 6 Pa

AMERICAN BOARD OF OPHTHALMOLOGY Los Angeles Jan 15-16 Sec. Dr John Green 6830 Waterman Ave St Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago Jan 21-22 Sec. Dr Guy A. Caldwell 3503 Prytania St New Orleans La

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Los Angeles, Feb 2-5 Sec. Dr Dean M Lierle University Hospital Iowa City Ia.

AMERICAN BOARD OF PEDIATRICS *Written* Locally Feb 4 *Oral* Philadelphia March 25-26 and San Francisco May 6-7 Sec. Dr C A Aldrich 707 Fullerton Ave Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral* Locally Dec 20-21 Sec. Dr Walter Freeman 1028 Connecticut Ave N W Washington D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec. Dr B R Kirklin 102 110 Second Ave. S W Rochester Minn

AMERICAN BOARD OF SURGERY *Written Part I* March Final date for filing application is Jan 1 Sec. Dr J Stewart Rodman 225 S Fifteenth St Philadelphia.

AMERICAN BOARD OF UROLOGY *Oral* Chicago February *Written* Various centers December 15-17 Final date for filing application is Nov 15 Sec. Dr Gilbert J Thoma 1409 Willow St Minneapolis Minn

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

27 335-382 (Aug.) 1943

Case of Monocular Hydrophthalmia, with Special Reference to Its Possible Relation to Sturge Weber Syndrome A Garraw and A Locwenstein—p 335

Iontotherapy (Ionic Medication, Iontophoresis, Ionization) as Aid in Ophthalmic Therapeutics N Fleming—p 354

Injury to Opticocochlear Junction: Case Report E B C Hughes—p 367

Angioma of Retina A G Cross—p 372

British Medical Journal, London

2 191-222 (Aug 14) 1943

Experiences in Military Dermatology R M B MacKenna—p 191

Pepsin Inactivation in Ulcer Therapy A M Gill and C A Keele—p 194

Precision Method of Cephalometry and Pelvimetry P Cave—p 196

Intramuscular Injection of Mepnerime (Atabrine) Histologic Effect F Hawking—p 198

Postvaccinal Encephalomyelitis S Dunn—p 199

2 223-256 (Aug 21) 1943

War Surgery in Middle East R K Debenham—p 223

Acute Lymphocytic Meningitis in "Epidemic Catarrhal Jaundice" Waring—p 228

Scleroderma R B McMillan—p 229

Jaundice Treated with Sulfamethazine: Report of 77 Cases B A Evers and M L Ershy—p 230

Effect of Injections of H II on Growth of Mouse Tumors D L Woodhouse—p 231

Composite Ziehl Gram Staining Method for Sputum, Pus and Exudates S Marshall—p 232

Edinburgh Medical Journal

50 385-448 (July) 1943

Experiments in Study of Immersion Foot W Blackwood and H Russell—p 385

Control of Sepsis J M Robson—p 399

Etiology of Rheumatism W M Levinthal—p 415

Studies in Refractory Anemia III Refractory Anemias with Cellular Marrow L S P Davidson, L J Davis and J Innes—p 431

Etiology of Rheumatism—Levinthal maintains that acute and chronic rheumatism is an anaphylactic disease with multiple lesions in the mesodermal system produced by continual antigen-antibody reactions in or on tissue cells. The antigen in most cases—gout is probably a conspicuous exception—consists of dissolved bacterial substances derived from the sites of subacute or chronic infection. The corresponding antibody is distributed in the faulty way characteristic of sensitization with a prevalence in the cells and a deficiency in the blood stream. This deficiency permits the antigen or a portion of it to pass unchecked the antibody obstacle in the circulation and to reach the antibody-storing tissues. The anaphylactic distribution of the antibody is due to its quantitatively insufficient output in a person with constitutional or temporary debility of the reticulo-endothelial system, such a person represents an intermediate type between the sufficiently good responder to immunizing stimuli and the complete nonresponder. This debility of the antibody-producing system is the basic cause of rheumatism. All agents detrimental to health and the functional integrity of the body, such as disease, malnutrition, exposure, and physical and mental exertion, act as indirect and precipitating factors, interfering with the antibody production.

Journal of Neurology and Psychiatry, London

6 1-82 (Jan-April) 1943

Neurotic Constitution: Statistical Study of Two Thousand Neurotic Soldiers E Slater—p 1

Psychosomatic Syndrome of Spurious Pregnancy After Menopause Betty Jacobs—p 17

Suggestibility and Hysteria H J Eysenck—p 22

Case of Atypical Lindau's Disease W R Brim, J G Greenfield and D W C Northfield—p 32

Spontaneous Ventricular Rupture in Hydrocephalus with Subtentorial Cyst Formation J Pennybacker and Dorothy S Russell—p 38

Erosion of Ala Nasi Following Trigeminal Denervation J Schorstein—p 46

Ventricular Changes After Closed Head Injury H Davies and M A Falconer—p 52

Deutsche medizinische Wochenschrift, Leipzig

68 1-28 (Jan 2) 1942 Partial Index

*So Called Catarrhal Icterus and Epidemic Hepatitis S Dietrich—p 5

Dependence of Reactivity of Organism on Type of Food Clinical Significance R Abderhalden—p 10

Damage of Joints Caused by Pneumatic Tools P Rostock—p 14

Pneumonococcosis Caused by Iron Dust K Humperdinck—p 16

Treatment of Tetanus W Batschwaroff—p 17

Catarrhal Icterus and Epidemic Hepatitis—Dietrich believes that the disorders designated as catarrhal icterus and epidemic hepatitis are probably identical. Catarrhal icterus is an infectious disease which is probably caused by a virus. The infection takes place from person to person probably by droplet or contact infection. Children are most readily attacked. The disease confers a prolonged immunity. Although its course is usually benign, it may lead to hepatic cirrhosis or acute atrophy. In almost every war in the last hundred and fifty years increased numbers of cases of jaundice have been observed among soldiers. The French have termed the disease "jaunisse de camps." During the Napoleonic wars large numbers of cases of jaundice were observed. It was also observed during the American Civil War, the Franco-Prussian War of 1870, the Boer War and the first world war. It was therefore to be expected that during the present war there would again be large numbers of cases of jaundice among the soldiers, and this has been the case. As in former wars, it has been noted that jaundice occurs chiefly during the fall and early winter months. Since the disease is infectious the patients should be isolated, although it is possible that transmission takes place in the preicteric stage. The treatment is symptomatic. In view of the fact that the disease is infectious and produces immunity, treatment with convalescent serum might be worth a trial. The "soldier's disease" is identical with epidemic hepatitis.

Zentralblatt für Chirurgie, Leipzig

69 161-208 (Jan 31) 1942

*Esophageal Diverticula and Diverticular Carcinoma G Graumann—p 166

Scrotal Preternatural Anus P Ries—p 176

Röntgenologically Demonstrated Papilloma of Renal Pelvis R E Wegener—p 180

*Is Use of Lenggenhager's Dry Serum Free From Danger? F Frimberger—p 183

Esophageal Diverticula and Diverticular Carcinoma—Graumann states that pulsion as well as traction diverticula are acquired and that developmental disturbances play no decisive part even in the development of pulsion diverticula. Developmental disturbances are probably not the decisive factor in cancerous degeneration of diverticula. Inflammatory processes occurring in every diverticulum may lead to atypical epithelial proliferations and thus create a basis for malignant growth. The author presents the history of a man in whom cancerous degeneration took place in a pulsion diverticulum of the esophagus.

Danger in Use of Lenggenhager's Dry Serum—Lenggenhager's serum is prepared from fresh cattle serum to which dextrose is added. It is dried by air, it can be stored indefinitely and it dissolves easily and without residue. It can be sterilized, because even prolonged boiling does not cause precipitation. After it is dissolved and boiled for ten minutes it is said to be suitable for intravenous administration to human subjects, quantities of from 300 to 650 cc being tolerated without reactions even after repeated injections. The boiling is supposed to destroy completely the foreign blood characteristics, so that no sensitization results. Frimberger points out that, although the cooking process may destroy the specific characteristics of the serum, new ones of antigen character, so called coctoantigens of coctoanaphylactogens, are certainly formed. He investigated the dried cattle serum for its antigenic characteristics on guinea pigs, rabbits and a dog. Repeated injections at intervals of two or more weeks caused severe and even fatal serum shock in all three species of animals. The serum of rabbits sensitized with dried cattle serum was found to contain antibodies against the boiled cattle serum. Antibodies against fresh cattle serum were absent. The development of coctoantigens during the boiling of the dried cattle serum is thus demonstrated. The author warns against the use of the dried cattle serum in human beings.

Book Notices

Roentgenographic Technique A Manual for Physicians Students and Technicians By Darmon Artelle Rhinehart A M M D F A C R Professor of Roentgenology and Applied Anatomy School of Medicine University of Arkansas Little Rock Third edition Cloth Price \$5.50 Pp 471 with 201 illustrations Philadelphia Lea & Febiger 1943

In the preface to this useful manual on x-ray technic it is stressed that the needs of x-ray technicians, medical students and physicians doing some roentgenographic work for them selves have been particularly kept in mind. Having thus clearly indicated the scope of the volume, the author proceeds to cover it quite adequately. In common with many textbooks of its kind, it appears to devote a little more space to physics than is necessary. The dark room layout illustrated on page 99 seems more cramped than it should be. In the sections dealing with x-ray examination of the extremities greater prominence should be given to the use of cardboard holders. The loss of fine detail and of adequate soft tissue rendition (inevitable when intensifying screens are used) can be partly avoided by the proper use of such film holders. Most of the illustrations in the text show the use of a cassette, and the accompanying roentgenographic reproductions show the high contrast inevitable with intensifying screens.

In connection with x-ray examination of the wrist, the author does not mention the value of posteroanterior or dorsoventral views made with the hand in slight ulnar deviation, in order to bring out detail in the scaphoid more clearly. For true lateral projections of the wrist merely rotating the hand is not sufficient, in this position only the radius and carpus are in lateral projection, the ulna is still in dorsoventral projection. For true lateral projections of the wrist it is usually necessary to turn the tube and use a horizontal beam.

In connection with x-ray examination of the hip, it would seem desirable to point out the advantages of lateral projection made with the leg flexed and abducted. Of course, this particular projection in the presence of a fractured femoral neck, can be made with safety only when the fragments have been immobilized by internal fixation. The illustration used for showing a lateral view of the femoral neck is not clear and deserves remaking. Similarly, that showing the bladder, figure 191, appears to be fogged and should be remade.

In the section concerning examination of the gallbladder with tetraiodophenolphthalein nausea is mentioned as a common complication. It might be worth pointing out in the next edition that this nausea can be completely eliminated by the simple expedient of having the patient hold his nose while drinking any of the popular preparations. There has recently been placed on the market a compressed tablet preparation which eliminates nausea almost if not entirely, irrespective of control of the olfactory apparatus.

The author mentions the use of fluoroscopy for preliminary determination of the presence or absence of opaque foreign bodies in the eye (page 439). We doubt if many roentgenologists would endorse this procedure. The dangers of fluoroscopy and indeed of radiography deserve a little more stressing than is given in the present text. The dangers of radiography with portable apparatus have been vividly illustrated in recent months by the tragic incidents at certain large industrial plants where many amputations of hands proved necessary following the indiscreet use of portable x-ray apparatus at too close a distance.

Most of the illustrations are clear and well reproduced. The type and format are also satisfactory. The book can be recommended for use by those for whom it was written.

A Handbook of Medical Library Practice Including Annotated Bibliographical Guides to the Literature and History of the Medical and Allied Sciences Based on a Preliminary Manuscript by M. Irene Jones. Compiled by a Committee of the Medical Library Association. Edited by Janet Doe. Cloth Price \$2.50 Pp 600 with illustrations. Chicago American Library Association 1943.

This volume was compiled by a committee of the Medical Library Association under the leadership of Janet Doe of the Library of the New York Academy of Medicine. An original manuscript prepared by M. Irene Jones was the basis for the complete work. Data are here made available that are not easily found in many other places. There is for example a list of medical libraries possessing a hundred thousand or more

volumes in and out of America. There are chapters on periodical and book selection, ordering, cataloguing, subject headings, classification, pamphlets, pictures, maps and microfilms, a discussion of rare books and a guide to bibliographies, biographic collections and histories. The final chapter is a consideration of reference work by Eileen R. Cunningham. While the book will not have much of an appeal for the average physician, it is well nigh invaluable to any one concerned with libraries in the field of medicine. The statement relative to the *Quarterly Cumulative Index Medicus* deserves repetition for the attention of every physician.

This index is the most important current international index to medicine and the allied sciences. No medical library can afford to be without it. Its importance to the medical profession is acknowledged throughout the world. It is of course particularly useful to English speaking readers but there is no other medical index of equal excellence and value published in any other country. It is conveniently arranged and is easy to consult rapidly.

The Conquest of Epidemic Disease A Chapter in the History of Ideas By Charles Edward Amory Winslow. Cloth Price \$1.50 Pp 411 Princeton New Jersey Princeton University Press 1943.

The author is professor of public health in Yale University. His objective has been to write a history of the ideas on which have been based the efforts to control epidemic diseases. "How did the leaders of science really visualize a given problem in a given century, what was their solution and what were the reasons which dictated that solution?" The course of epidemiologic progress is described in detail.

A hurried summary can give only a general outline of the scope of the book. Following detailed reviews of supernatural medicine, demonic and divine, practices of which are not yet limited to the past or to remote places, account is given of the directing influence of observation and experience on medical thinking in Greece, in accord with the Greek concept of a universe of natural law. Hippocrates observed that each disease "has a nature of its own, and none arises without its natural cause," and in the case of epidemic diseases this cause is mainly disturbances of the body by atmospheric influences. Some five hundred years later Galen defined epidemic disease as one "which attacks all, or the greater number, arising from corruption of the air with the result that great numbers perish." Certain diseases, notably ophthalmia, skin diseases and phthisis, were early recognized as contagious. The fact that epidemics always spared some persons was explained on the score of individual predisposition. These three factors—atmospheric influences, predisposition and contagion—dominated epidemiology until the nineteenth century. Winslow observes that, while historians and poets suggested that epidemics were spread by contagion, miasmatic and constitutional factors received the main emphasis in medical writings. He points out that the Old Testament presented the first clean cut conception of contagion and built on this conception a definite and well conceived program of differential diagnosis, isolation, quarantine and disinfection. For three hundred years after 1348 plagues raged in Europe and it was the Black Death which at last taught the communicability of disease by contact beyond all doubt. The numerous tracts put out to explain the causes and treatment of plague appear to be the first example of popular instruction in public health on a large scale and in these tracts contagion was accepted. It was in the sixteenth century that Fracastorius developed a remarkably complete and adequate theory of contagion in which the only major deviation from the modern conception was the lack of recognition of the biological nature of the contagious element. In the seventeenth century Athanasius Kircher presented the first clear concept of "contagium animatum" and Leeuwenhoek, the first to do so, described and figured bacteria and protozoa. The stage was now fully set for a sound complete theory of contagion but the emphasis by Sydenham on the epidemic constitution of the atmosphere to the neglect of contagion in the spread of epidemics held back the progress of epidemiology for many years. The modern public health movement started in the first half of the nineteenth century with the great sanitary awakening led by Shadwick Simon Snow and Budd. The role of filth as the nurse of infectious disease if not the mother and the nature and modes of spread of the contagions of cholera and typhoid were demonstrated even before their bacterial etiology was known. Finally led by Pasteur the germ theory of commu-

cable disease was established. Discovery of the carrier and of the insect host, as well as the close analysis of modes of infection, explained the occurrence of infectious disease when not traceable directly to contact as commonly understood. The book closes on a note of triumph for the germ theory and of reminder of unsolved problems. "There is today a wholesome reaction against exclusive emphasis on the germs and a recognition of the importance—even in many germ diseases—of factors of constitutional resistance (diathesis) and of the influences of climate and season and nutrition upon vital resistance."

The book is based on deep, comprehensive study and able analysis of first hand information. As stated in the author's preface, "the story has been told as far as possible in the actual words of the various participants and after a thorough analysis of their surviving works." There are also appropriate sketches of the participants. The long chapter on "The Enigma of Yellow Fever" might well have included a brief comment on its solution. The role of vaccination in the control of small-pox might also have been considered, even though the general subject of immunity is not included in the discussion. The book is a notable example of good historical writing and scholarship.

The Therapy of the Neuroses and Psychoses. A Socio-Psycho-Biologic Analysis and Resynthesis. By Samuel Henry Kralnes M.D. Associate in Psychiatry, University of Illinois College of Medicine, Chicago. Second edition. Cloth. Price \$5.50. Pp 567, with 6 illustrations. Philadelphia: Lea & Febiger, 1943.

This is a good book on psychiatric treatment. Both psychologic and medical therapeutic measures are discussed in some detail. In spite of the title there is a considerable portion on psychosomatic diseases, which are perhaps not really neuroses in a technical sense. The explanations which are given are up to date and carefully presented, and the style is good. All of the mental disorders which would interest any one doing therapy with mental cases are well covered. While some variations of medical treatment are not discussed, the presentation as a whole is quite detailed and adequate. There is nothing dramatically new, but this volume is one of the few books that contain such specific material on treatment of mental cases, a subject which is becoming more and more important today with the return of mentally and nervously disordered members of the armed forces. There is some discussion of the war acquired mental disorders and there is less discussion of the psychoanalytic method in this than in the previous edition, however, much of the discussion is predicated on psychoanalytic concepts, although not expressed in psychoanalytic terms. There are a number of case histories which are well presented and in most instances form quite conclusive evidence of the therapeutic methods which the author describes. The psychiatrist and the general practitioner who have to treat neuroses and psychoses and psychosomatic complaints should be able to get much valuable information.

Notes on Gas Gangrene. Prevention, Diagnosis, Treatment, with an Account of the Technique of Wound Excision and a Scheme for the Bacteriological Investigation of War Wounds. By the War Wounds Committee of the Medical Research Council and the Committee of London Sector Pathologists. Medical Research Council War Memorandum No. 2. Second edition. Paper. Price, 6d. Pp 28. London: His Majesty's Stationery Office, 1943.

This paper gives a thorough and complete discussion of all the medical, surgical and pathologic aspects of gas gangrene. It represents a balanced view of British experience in the subject, therapeutic, as well as diagnostic. It is a sober, well balanced dissertation. In concise form and in simple language there are presented in order the clinical aspects of the disease, its prophylaxis and the laboratory methods of diagnosis. The bacteriologic portions are particularly good. Much ink has been spilled in the complexities of the etiologic anaerobes. That error is not made here. On the contrary, the laboratory procedures given have the double virtue of being short and accurate.

The Nature, Method & Purpose of Diagnosis. By Henry Cohen M.D. FRCP, FRCR. Professor of Medicine, University of Liverpool. The Bkinner Lecture. Paper. Price, 1s. Pp 27. Cambridge University Press, 1943.

This booklet contains Dr. Cohen's Otis Skinner Lecture delivered under the auspices of the Faculty of Radiologists at the Royal Society of Medicine. As the title implies, this is a philosophical discussion of the larger aspects of diagnosis.

Vertebrate Photoreceptors. By Samuel R. Detwiler. Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price \$4. Pp 184 with 110 illustrations. New York: Macmillan Company, 1943.

Beginning with a short description of the eye as a whole in various vertebrates, the author goes on to a more detailed study of the vertebrate retina. With a careful digest of the literature is included a summary of his own studies, including measurement of the retina in twenty-seven different vertebrates with illustrations from his own photomicrographs. Various forms of the macular area are illustrated and adequate consideration is given to Polyak's work, which has necessitated a modification of our simple conception of the conduction pathways in the retina to a much more complex one. The minute histology of the rods and cones and their development are reviewed. The author estimates that there are about seven million cones in the human retina and from seventy-five to one hundred and seventy million rods. His review and personal studies have convinced him that the duplicity theory is valid, i.e., that the cones and rods form distinct systems mediating vision in high and low degrees of illumination respectively.

Consideration of the habits of various vertebrates is, generally speaking, in accord with what one would expect from this theory, cones predominating in the retinas of diurnal animals while in nocturnal forms rods are chiefly or exclusively present. Some apparent exceptions are the presence of abundant rods in the strictly diurnal chicken and of cones, though small ones, in the owl. Wall's conclusions that cones may change to rods during evolution, involving a change of habits in certain vertebrates, is discussed.

The latter part of the book, dealing with the functions of the retina in relation to its anatomic structure, is of especial interest. The author has critically analyzed the evidence for various theories and, on the whole, is inclined to emphasize the need for further experimental evidence as regards most of them. Although migration of pigment during light adaptation has been conclusively demonstrated in many forms by various observers, including the author, it is absent in other forms and has not been conclusively shown to occur in any of the mammals in spite of statements to the contrary, which persist in many textbooks. The same is true of contraction of the cones and elongation of the rods during light adaptation, which has not been proved to occur in mammals although it is definite in many lower forms.

In at least some forms showing these photomechanical responses, they disappear following section of the optic nerve and also, according to Arey, have a definite relation to eye movements. A peculiar phenomenon of diurnal rhythm in these reactions observed by Welch and Osborn has been confirmed by Arey and Mundt. The changes of extreme dark adaptation were found only in animals whose eyes were removed at night, regardless of how long the animals had been dark adapted. It is concluded that, while these photomechanical responses are of value for dark adaptation in those forms in which they occur, they cannot be regarded as explaining the phenomenon.

While we are accustomed to consider our own visual apparatus as at the top of the scale from a functional and evolutionary standpoint, there is evidence from comparative anatomy that this is by no means the case. In birds the cones are much more closely packed in the foveal area than in man, there being about one million cones per square millimeter in *Buteo* as compared with a hundred and sixty thousand in man. In the goldfinch the internal nuclear layer is five times as thick as the vitreous, whereas in man the internal is actually narrower than the external nuclear layer, another indication of much greater visual acuity in the bird. The occurrence of well developed foveas in many lower forms, such as the lizards and in forms in which complete decussation of the optic nerve fibers occurs, deprives of all validity Elliott Smith's assumption that the fovea is a criterion of place in the evolutionary scale.

The facts concerning biochemical changes in the retina during adaptation are reviewed and a final chapter is devoted to the effects of vitamin A deficiency. In addition to the well known functional findings as revealed by adaptation tests, the author describes certain degenerative changes, as shown by

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microscopic studies, which occur in the rods after prolonged vitamin A deficiency. These, as shown by the author's associate Johnson, may reach extreme degrees and, although recovery from such changes was shown to occur, it was slow, requiring ten to eighteen weeks in rats and was not complete at the end of this time.

A Text Book of Pathology. An Introduction to Medicine. By William Boyd M.D. LL.D. MRCP. Professor of Pathology and Bacteriology in the University of Toronto. Toronto. Fourth edition. Cloth. Price \$10. Pp 1 008 with 519 illustrations. Philadelphia. Lea & Febiger 1943.

The first edition appeared in 1932. The publication of four editions in eleven years is an indication of its popularity as a textbook among medical students, for whom it was primarily written, and of the rapid changes that are taking place in pathology. The modern point of view in pathology, still not recognized by many physicians, considers disease from its physiologic aspect against the background of morbid anatomy and histology. The structural changes induced by disease are still the chief concern of the pathologist but with the added factor of the effects of these changes on the function of the diseased organ. This is definitely the point of view from which Boyd's book is written. This edition is characterized by the same clear style, the same readability and the same apt allusion and deft turn of phrase that have been such prominent features of previous editions. It is fifty-six pages shorter than the third edition and is illustrated with 490 "engravings" and 29 colored plates. Three hundred and forty-six pages are devoted to general pathology, 631 to special pathology and 37 to the index.

This revision may lay claim to be a thorough one, because in addition to new material, much has been rewritten, much has been condensed through a tightening of the belt of speech and a considerable amount has been deleted. The principal deletions are the chapter on body constants in disease, the sections on immunity and hypersensitiveness and on the principles of heredity and much bacteriologic detail in the chapter on bacterial infections. All these subjects are dealt with more adequately in textbooks in other fields and should have been learned by medical students in other courses that are prerequisite to the study of pathology.

In the preface, twenty eight additions are listed. Among the more important of these are vitamin K in relation to thrombosis, histoplasmosis, liposarcoma, necrosis of the liver in burn, spread of tumors by the vertebral system of veins, virus pneumonia and radiation pneumonitis, cystic fibrosis of the pancreas, the renal juxtaglomerular apparatus, the relation of the kidney to hypertension, crush nephritis, Hunner's ulcer, blood phosphatase in carcinoma of the prostate, fibrosing adenomatosis of the breast, Boeck's sarcoid, the Rh factor in erythroblastosis fetalis and lesions of the intervertebral disks. Seventeen sections have been largely or in part rewritten, such as the etiology of tumors, cirrhosis of the liver, goiter, pathologic physiology of the spleen, etiologic agents in carcinoma of the breast, the etiology of atheroma of cholecystitis and of diabetes, the pathogenesis of lobar pneumonia, endometriosis, and the etiology of poliomyelitis.

The qualities of this book justify its popularity among medical students. While definitely not written for either practicing physicians or pathologists, both these groups will find in it much that is interesting and valuable. On the whole, the opinions expressed often quite dogmatically, by the author are sound and in harmony with the established facts of modern pathology.

Annual Review of Physiology. Volume V. Edited by James Murray Luck. Stanford University. Associate Editor Victor E. Hall. Stanford University. Cloth. Price \$5. Pp 613. Stanford University P. O. Annual Reviews Inc. 1943.

It is recognized in the preface to this volume that probably all reviews which will appear for the duration of the war will have to omit reference to important foreign scientific publications. Nevertheless the table of contents offers an impressive array of physiologic subjects reviewed by an equally competent group of authorities. The reviews of this series including the one under consideration, are quite invaluable for research workers and medical libraries. They should be also of great assistance to scientifically minded workers everywhere who attempt to keep abreast of the rapid advance of science.

Clinical Roentgenology of the Cardiovascular System. By Hugo Roesler M.D. F.A.C.P. Associate Professor of Roentgenology and Cardiologist, Department of Medicine, Temple University School of Medicine, Philadelphia. Second edition. Cloth. Price \$7.50. Pp 480 with 337 illustrations. Springfield, Illinois & Baltimore. Charles C. Thomas 1943.

The author has considerably enlarged and revamped the text in this edition to bring the material up to date. The illustrations have been expanded and improved the presentation by including more graphic case reports. The author's experience in this field together with his background of teaching, research and clinical practice makes him well qualified to deal adequately with the subject. The book is useful for the beginner, but he will have to absorb it piecemeal. It is excellently suited for the cardiologist since it integrates roentgenology with clinical states. It is well adapted for the roentgenologist since it gives him a clinical and anatomic background of the conditions considered making his point of view more complete and suitable as a consultant. It will be found useful as a reference book. It is therefore regrettable that at times the style makes it difficult to follow the author's thoughts, that certain words are used in an unusual sense, that more headings of subdivisions have not been introduced and that the illustrations have not been placed at the end of each section rather than interspersed in the text. Further it would have helped if the author had set off a section in the legend of every illustration devoted to comment in which he could integrate the points for which the case report was presented, this is done in only a few cases. This lack at times makes it difficult to find out what the figure is supposed to illustrate. The reproductions are excellent, and the illustrative material is arranged so that it can be used independently of the text. Only one error was noted in the illustrations, namely that the chest lead record of the second electrocardiogram in figure 281 is reversed. Considering the merits of this excellent book these are relatively minor criticisms. The author is to be commended for his courage in omitting references in the text to particular communications in order to avoid the pitfall, found in many textbooks, of giving credit to particular authors rather than in pointing out the broad sweep of subject development. Polemics are avoided, and the deductions presented are those of the author himself. The bibliography is extensive and should meet the requirements for further study of any reader. It seems, therefore, that this book admirably fulfils a real need in clinical practice.

Pictorial Handbook of Fracture Treatment. [By] Edward L. Compere M.D. F.A.C.S. Associate Professor of Surgery, Northwestern University Medical School, Chicago and Sam W. Banks M.D. Associate in Surgery, Northwestern University Medical School. Cloth. Price \$4.25. Pp 351 with 171 illustrations. Chicago. Year Book Publishers Inc. 1943.

This handbook was compiled particularly for the general practitioner and medical students. The authors have presented the simplest principles and methods which they have found satisfactory for the treatment of fractures. The excellent illustrations by Dr Harold Laufman give a graphic presentation of the technic described in the text and make the subject matter more readily comprehensible. The authors follow the methods of treatment of fractures and dislocations described in the modern textbooks of Boehler, Campbell, Key, Conwell, Magnuson, Scudder, Speed and Watson-Jones. The subject matter is condensed and is written to substitute for the larger textbooks. The general considerations of treatment of fractures are limited to the essential facts. Then fractures are taken up according to the parts involved, and the authors' method of choice is described. In some of the difficult fractures the method of necessity, involves technical difficulties which it would be hard to expect the student and general practitioner to carry out such as the five pin treatment for the fracture of the neck of the femur, as well as the various technics of reconstruction when this fracture becomes ununited. Bone grafts are described with clearness, but this does not make them any simpler or safer to do in the hands of the inexperienced. On the whole the book is well written and the illustrations add a great deal for the simplification and clarity of this large subject. The book is concise and a good condensation of the larger textbooks on fractures.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ACUTE FEBRILE ILLNESS AND ADMINISTRATION OF SULFONAMIDES

To the Editor—I have had several interesting cases at a camp in the Catskills during this past summer and hope that you can help me explain them. These were all of a similar nature. They were all characterized by an acute onset with headache and no other physical findings except temperature from 101 to 103 F. Two of the patients not treated with sulfadiazine developed signs in the chest, which were not of a classic pneumonia, and an increasing cough. One of these reached a temperature of 104 F on the fifth day and responded rapidly to sulfadiazine. The other patients (4) were treated immediately at onset with sulfadiazine and were better by the next day. These patients were all children from 9 to 12 years of age. The total amount of sulfadiazine varied from 50 to 90 grains (3.25 to 6 Gm). Headache started to disappear almost immediately on administration of sulfadiazine without any other drug. I have spoken to another physician in this locality who has had similar cases, but he states that he has had some rapid cures without sulfadiazine. I would appreciate any information you can give me.

M D, New York

ANSWER—Although it may be that the epidemic disease referred to was an unusual one in which the sulfonamides were helpful, the few details given strongly suggest that it was one of the syndromes called "primary atypical pneumonia, etiology unknown" or virus pneumonia. It appears that in the epidemic form of this griplike or influenza-like syndrome the majority of cases are mild and without pneumonia, which casts doubt on the wisdom of using the word "pneumonia" to name it. Some more general name like the ones just mentioned would seem preferable. An example of a similar epidemic in a summer camp is described by Iverson (*Bull Johns Hopkins Hosp* 72:89 [Feb] 1943), in which pneumonia occurred in certain cases. The sulfonamide compounds are not of value in infections of this sort. Although it may be too late now, it would have been of interest to determine the presence or absence of cold agglutinins in the blood of these patients (*THE JOURNAL*, June 5, 1943, p. 369).

It is doubtful that pneumonia developed in the 2 cases mentioned because sulfadiazine was not given, and equally doubtful that sulfadiazine alone caused the immediate rapid response noted.

NITRATES IN VEGETABLES NOT TOXIC FOR MAN

To the Editor—There is an idea prevalent among the people around here that nitrate of soda used as a fertilizer to vegetable crops is injurious to human beings. People will get sick after eating certain vegetables and then say "I should have known better than to eat those cabbages or watermelons that have been grown with nitrate of soda." Since nitrogen is essential to plant growth I am unable to see why the application of nitrate of soda to hasten growth could be injurious to the human organism. Is there any evidence that the use of nitrate of soda as a commercial fertilizer to certain fruits and vegetables is in any way injurious to the person eating it?

J Street Brewer, M D, Roseboro, N C

ANSWER—Nitrogen is one of the most important plant nutrients and is usually the limiting factor in the growth of practically all crops. The general opinion is that it may be possible under extremely unusual conditions for nitrate to accumulate in the vegetative portion of the plant. This has been recorded for tobacco which has had a surplus of nitrate of soda applied to it. The veterinarians state that there is one case on record of a toxic reaction of stock to a field which had an extremely heavy application of nitrate of soda. In general nitrate which is applied as fertilizer is rapidly converted to other forms of nitrogen if not immediately used by the plant. The plant serves as a reducing system and converts the assimilated nitrate to nitrite, to ammonia, to amino acids and to protein constituents. Tollingham in *Plant Biochemistry*, discussing nitrogenous compositions of tomato plants, states that "these data show almost complete disappearance of nitrate in passing from the roots to the tip of the stem but there is a serious reappearance of this fraction in the conducting system of the leaf. This may signify, of course, translocation toward the leaf more rapidly than will allow reduction by the stem mechanism, but it is apparent that the leaf lamina promptly disposes of nitrate." Nightingale (*New Jersey Agricultural Experiment Station Bulletin* 461, 1928) found 10 to 13 per cent

of the total nitrogen present as nitrate in all parts of the tomato plants except the leaf blade. Bridges and Mattice state that a watermelon contains 0.4 per cent of protein (N times 6.25) or 0.064 per cent nitrogen, if 15 per cent of this is nitrate nitrogen, equaling 0.0096 per cent N as nitrate or 0.042 per cent nitrate as NO_3 . It would hence require 2,500 Gm (over 5 pounds) of watermelon to contain 1 Gm of nitrate. If one ate thus much one would be sick from something besides nitrate poisoning. Furthermore, Merck's gives the clinical dose from 0.2 to 1.3 Gm of potassium nitrate. Toxic amounts are much greater. If nitrate poisoning occurs, one would expect it from market gardening where heavy fertilization is the rule. Record of such an occurrence has not been found.

There is no evidence to support the belief that the use of nitrate of soda in the growing of fruit and vegetables is in any way injurious to people who eat such produce.

REPEATED BLOOD DONATIONS AND IMMUNE ANTIBODIES

To the Editor—Is there any scientific evidence to warrant the assumption that immune bodies, specific or general, might be reduced appreciably by repeated donations of blood so that the donor's resistance to infection would be materially affected?

R V Brokaw, M D, Champaign,

ANSWER—There is no evidence that the periodic donation of blood as practiced by professional donors or persons donating their blood repeatedly to the Red Cross reduces appreciably the capacity of the body to form immune antibodies. If small donations have any effect at all, it would more likely be a stimulating one. According to the present view antibodies are modified globulins, and to reduce the capacity of the body to produce antibodies rather drastic measures are necessary. This has been accomplished in experimental animals, for example, by feeding young rabbits a low protein diet and in adult rabbits by submitting a low protein diet by plasmapheresis (Cannon, P Chase, W E, and Wissler, *R W J Immunol* 47:133 [1943]).

INFRAORBITAL EDEMA AND EXOPHTHALMOS AFTER THYROIDECTOMY

To the Editor—The exophthalmos associated with hyperthyroidism not infrequently is increased following removal of the goiter. In a few patients the exophthalmos is complicated by infraorbital edema. What is the physiologic basis of that type of edema and what is the favored treatment? The cases cited average a metabolic rate of between plus 10 and plus 15.

Robert Hoffman, M D, South Bend,

ANSWER—The cause of infraorbital edema and increased exophthalmos following subtotal thyroidectomy is not clearly understood.

The most logical explanation so far presented is that it appears to be related to disturbances in pituitary function. The most interesting aspect of the problem is that the exophthalmos often increases when the basal metabolism is within normal limits. However, there is too much tendency to create an impression that this phenomenon occurs more frequently than it does.

Some improvement seems to have followed the combined administration of strong solution of iodine and desiccated thyroid. This is probably the most satisfactory treatment at the present time.

Irradiation of the pituitary has been tried with questionable results.

It is rarely necessary to resort to any operative procedure such as removal of the roof of the orbit to allow the eyeball to sink back into the skull.

ADHERENT SCAR IN FRONT OF TRACHEA

To the Editor—On page 68 in the Sept 4, 1943 issue of *The Journal* under *Queries and Minor Notes* there is an item about an adherent scar in front of the trachea following a thyroidectomy. The question is: about a deep funnel shaped scar which is adherent to the trachea. Is not this due to the so-called prethyroid muscles being widely separated in this area and leaving nothing but scar tissue between the skin surface and the trachea? When the scar is excised it would seem desirable to pull the deep prethyroid muscles, the sternothyroid muscles, together along the midline with interrupted sutures and do the same for the superficial prethyroid muscle, the sternothyroid muscle, and thereby eliminate the depression in this area over the trachea. This is an important step in thyroidectomy in my estimation, and certainly it is true in women because this preserves the contour of the neck rather than having a depression over the trachea when the muscles are not sutured together in the midline.

Leslie M Bell, M D, Winchester,

